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## An Abandoned Invention of Merit.

[Communicated by MR. FREDERIC EGNER.]

"Once upon a time" the task of inventing a method, by which water gas could be made without infringing other patents, was assigned the writer by the President of the Company he was then serving, the Laclede Gas Company, of St. Louis, Mo. Briefly, the reasons for such a rather strange request were these:

The Laclede originally entered St. Louis as an opposition concern, years before the event about to be related. It was firmly established and upon friendly terms with the old St. Louis Gas Company, having divided the territory between them. In the year 1883 a third gas company appeared in the field.

That Company erected its works in the old (St. Louis) Company's district (on the site now occupied by the Union R. R. Station), but confined its actual operation in the way of obtaining consumers to the north side of Washington avenue, which had been the dividing line between the earlier companies; in other words, the new company made open competition on the Laclede only.

One of the arguments used by the Company in its attempt with prospective consumers was that, as it chiefly used water in the manufacture of gas, and as the Mississippi river flowing by was full of this fluid, costing practically nothing, it could afford to sell its product for less than could the Laclede; and through that specious statement its proprietors met with considerable success. Then and now, coal gas (unless the candle power requirements are unreasonable) can be produced at St. Louis, Mo., for less money than water gas; and we were well aware of the fact. But the consumers of gas, not being "Skilled in the art," did not care about that. What got them was the very substantial reduction in price per 1,000 cubic feet which the new Company offered. On the southside of the city the St. Louis Company was charging $2.50; on the northside the Laclede sold for $1.50; and the new Company offered to sell at $1 per 1,000 cubic feet.

We promptly reduced the price to the lower figure, and it was then, when the water gas statement mentioned before was made to count, by the opposition saying we could not keep it up, and that if the Laclede beat them, the people would soon have to pay the former price; hence, better support the "Light, Heat and Power Company." And that was the time a strange task was set the Engineer of the Company, who is the writer of this article.

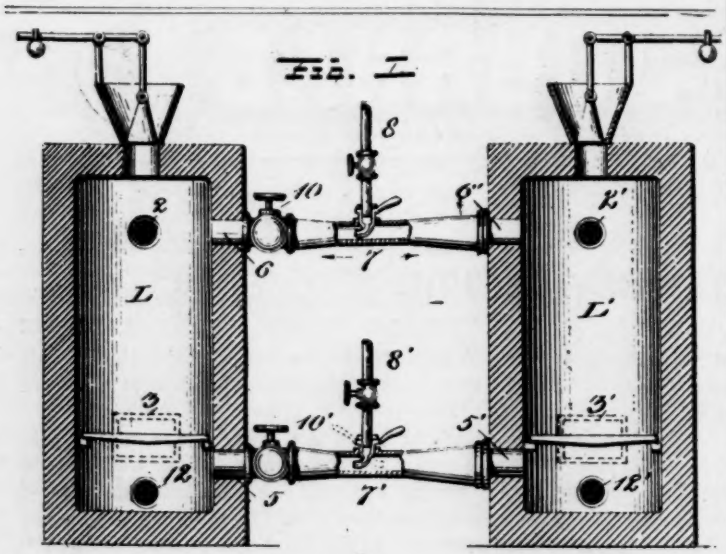
For the information of "the younger set" it may be stated that the last named Company owned the patent rights, for St. Louis, of the Lowe inventions, and as there were no other water gas processes worth bothering with to be had, so the desired invention was made. The apparatus was erected on a fairly large working scale and operated for a number of years, being improved from time-to-time, as was to be expected. Uncarbureted water gas only was made in the apparatus about to be described in its final shape, which gas was mixed with oil gas made in retorts by a very simple, though thoroughly effective, method.

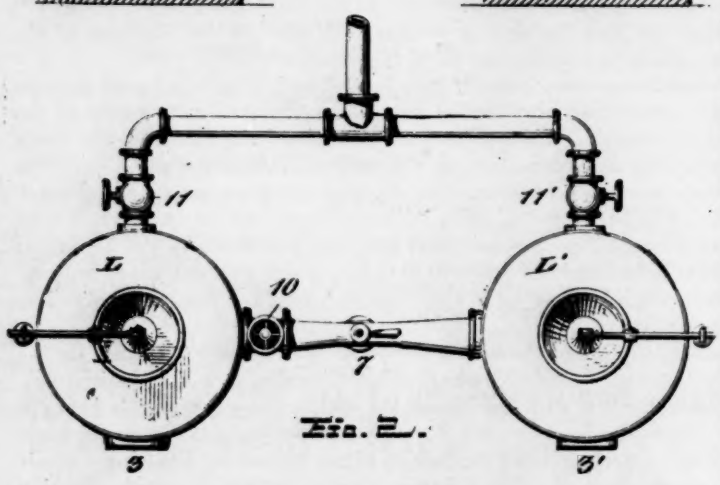
The difference between the "Lowe" and "Egner" process for the production of "blue" water gas (uncarbureted, or non-illuminating), consists in that with the former the fuel in the generator is brought to incandescence by means of a blower, whereas in the latter the same object is accomplished by means of an exhauster drawing the air through the fuel: The "Egner" was, therefore, the first "Suction Gas" process recorded in the files of the U. S. Patent Office.[1] As we really did not care to make water gas, only making a small percentage to enable our canvassers to meet the argument of the opposition, only a single generator was erected and operated for several years; but, as the results obtained were really not bad, another generator was added after a while, for we were cramped, as to retort room or coal gas generating capacity, at the "Old" Laclede works, now "Station B" of the Company of that name. Before me is a copy of one of the annual reports made by the writer to the President of the Company, and from it the following figures are taken—please remember that the water gas was not carbureted in this apparatus, oil gas being added afterwards: Coke used per 1,000 cubic feet of water gas made, 30.19 pounds. Gas made per man, 87,585 cubic feet; meaning that said quantity of gas was made per man on each 12-hour shift in the year. One man could easily—and afterwards did—attend at least two generators; but the figures given were obtained while only one was at the works. It was after the second generator had been put into operation that the remarkable phenomenon was observed which the writer had no opportunity to try out to a finish then or since.

Should any reader care to take it up there is nothing to hinder, for, as the application for a patent was abandoned over 21 years ago, it is now free to all. Why it was lost is another story which does not belong here, and would scarcely interest the reader. In the application for a patent, made more than two decades ago, may be read the following: "It will be found that, by my arrangement as herein set forth, comparatively little atmospheric air will be required to properly conduct the cycle of decompositions and recompositions taking place within both generators simultaneously, and that anything entering said generators must be converted into a useful product, except, indeed, the slag or ashes of the fuel; and that nothing can be lost that can give heat, excepting the loss due to radiation from the

1. See U. S. Patent, No. 315,751; April 14, 1885, on a "Furnace for Manufacturing Illuminating Gas," granted to F. Egner, St. Louis, Mo.

surface of the generators and pipes, which heat can be largely utilized to heat air, oils or water used by the apparatus itself, by means which may suggest themselves to those who think and interest themselves in such matters. * * * *." Figs. 1 and 2 are diagrammatic views




of the apparatus, the first being a sectional view in elevation and the other a plan view of the same apparatus.

"The valves shown in practice were of the Roots' type, made by the P. H. & F. M. Roots Co., of Connersville, Ind., and at the beginning Roots' exhausters were used along with the steam jets shown. * * *." *L L'* represent the generators (like numbers denote like parts in all the drawings); 2, 2' are the gas outlet openings above the grate; 12, 12' are the gas outlet openings below the grate, and 5, 5', 6, 6' are the openings to the steam jet or other exhausting devices, 7, 7'. These exhausters are supplied with valves 10, 10', and steam pipes 8, 8'; connected with a suitable boiler (not shown). The gas outlets are also provided with valves 11, 11'. Those on the lower openings, 12, 12', cannot be shown in this drawing, but are connected the same as those above. The method of operating may be understood by the following description: Fire having been lighted in both generators in the usual manner, and fuel to a suitable depth supplied, air and a little steam are admitted to generator *L*, by opening door 3 (or a valve instead of the door may be used), and exhauster 7 is started to work in the direction of generator *L'*. It should be here stated that the exhausters should be made reversible, in the case of the steam jet, by a double, reversible nozzle, such as indicated diagramatically in Fig. 1, and if a rotary exhauster is used, by reversing the motion.

"In case a rotary exhauster is used, steam must be blown into generator *L'*, along with the products exhausted out of generator *L*. This having been done, the products from generator *L*, with the necessary steam, pass on down through the incandescent fuel in generators *L'*, are decomposed into combustible gases in their passage, and pass out at 12' to the purifying or storing vessels.

"When the fuel in generator *L'* is no longer able to decompose the products from generator *L*, the action of the exhauster is reversed, door 3 is closed, opening 12' also, and openings 3' and 12 are opened. It is, of course, understood that valves 10 and 10' are also opened or closed as the case may require.

"In the present case valve 10 should be open and valve 10' should be closed. When *L'* has become too cool to decompose the products from *L*, it will be found that, by that time, the fuel in generator *L'* will be very hot, and in turn can act as decomposing chamber. The foregoing description assumes that the lower gas outlet openings 12, 12', are alternately used. In case the upper openings 2, 2', are to be alternately used, outlets 12, 12', both remain closed, valve 10' is closed, valve 10 is opened, and the lower steam jet or exhauster 7', to the exclusion of the upper one 7.

"It will be readily seen by those skilled in the art of gas making, that both generators may be operated by this arrangement, either up or with a down draft, and the advantage of same cannot fail to be recognized."

The grates used in this apparatus were of the cast iron "shaking" type, which arangement admitted of operating the generators without hardly ever opening the clinkering doors. Practically, there were no clinkers, all the refuse from the fuel coming down through these shaking grates in the shape of scoria. We had run this apparatus for some time, when one night the Superintendent of the works called me up and asked me to come to the plant to look at the water gas apparatus, which he had shut down because it was getiing so hot that he feared it might melt the lining. On looking it over it was found to be a singular fact *that scarcely any air had been admitted under the grate of the primary generator of the respective duplex operations for more than 7 hours*, yet the apparatus had gained in heat, and had produced gas practically continuously, with the slight delay of reversing valves to reverse the flow of gas from time to time excepted.

After that we ran the two generators for several months, in the manner described, using hardly any air, shutting down for a while when the apparatus became too hot. About that time the writer was much harassed through agencies, of no interest to mention in this article, but which prevented giving that attention to the subject which it certainly deserved. The management of the Company was radically changed. The late Col. William A. Stedman succeeding the writer, who went to New York city as Chief Engineer of the Standard Gas Light Company. And so the thing was neglected and forgotten, save by the inventor, who, however, was not situated or in position to follow up the subject. Analyses of the gas made, showed that it contained remarkably little nitrogen; and should anyone care to follow up this matter, it may richly repay the effort.

[CONTINUED FROM PAGE 375.]

## PROCEEDINGS, SIXTH ANNUAL MEETING, AMERICAN GAS INSTITUTE.

HELD IN ST. LOUIS, MO., OCTOBER 18 TO 20, 1911.

### FIRST DAY—AFTERNOON SESSION.

#### COMMITTEE ON PRESIDENT'S ADDRESS.

Chairman H. L. Doherty entertained a motion to put the address in the hands of a special Committee, with instructions to report their consideration thereof later in the session. He subsequently appointed as such Committee, Messrs. A. P. Lathrop, W. A. Baehr and James W. Dunbar.

The President resumed the Chair, and Mr. C. H. Nettleton (Chairman) handed in the following

#### REPORT OF NOMINATING COMMITTEE.

The Committee unanimously reports as follows:

*For President.*—Hon. I. C. Copley, Aurora, Ills.

*For First Vice-President.*—Mr. V. F. Dewey, Grand Rapids, Mich.

*For Second Vice-President.*—Mr. E. N. Wrightington, Boston, Mass.

*For Secretary and Treasurer.*—Mr. Beadle sent a positive communication to the Committee stating that he would prefer to withdraw and give up the work, owing to his own outside tasks. In consequence the Committee nominates Mr. George G. Ramsdell, of New York.

*For Directors* (to serve 2 years).—Messrs. C. L. Holman, George McLean, Alten S. Miller, Rollin Norris and R. E. Slade.

#### ELECTION OF OFFICERS.

On motion of Mr. E. G. Pratt, the Secretary was directed to cast the ballot of the Association in favor of the gentlemen named. Messrs.

Searle, Humphreys and Pratt were appointed tellers. The Secretary having reported that the directions had been carried out as to the casting of the ballot, and the tellers having reported accordingly, the President announced the result. He then called for President-Elect Copley, who thus acknowledged his promotion:

Mr. President and Fellow Members of the American Gas Institute: I want to thank you from the bottom of my heart for the honor you have conferred upon me. I am going to do the best that I possibly can to merit your good will next year, as well as on this occasion, and if I fall down I hope to be able to throw the responsibiiity on to someone else. I will not take any more of your time other than to express my thanks.

### Response of Mr. Dewey.

Mr. Dewey—I wish to thank the Nominating Committee and the members of the Institute for the honor conferred. I trust I shall be able to discharge the duties of the office of Vice-President. I understand they are very light. In fact, the only thing I have to do, I believe, is to preside in case Mr. Copley is run over by the Democratic band wagon, which I trust is not likely. Thank you.

### Committee on Place of Next Meeting.

The President appointed Messrs. A. S. Miller, A. P. Lathrop and Rollin Norris.

The President called for

### Reports of Committees.

Mr. Dewey, on behalf of the Technical Committee, submitted the list of papers to be read.

Mr. J. B. Klumpp (Chairman) handed in the following

### Report of Committee on Calorimetry.

The report of the Calorimetry Committee for 1911 must follow somewhat the lines of the report presented last year; namely, one of progress. While considerable experimental work has been done, the results are not conclusive enough to permit of publishing completely the data obtained during these tests. We are including, however, some few recommendations that we think will be of value.

The experimental work during the last year has included the time of two engineers covering a period of nearly 3 months. This work was done at the University of Wisconsin, Madison, Wis., by Mr. J. N. Lawrence, under the supervision of Mr. O. L. Kowalke, and at the Philadelphia Laboratories of the United Gas Improvement Company, by Mr. Maurice S. White, under the supervision of Mr. J. B. Klumpp.

The laboratory work consisted of testing for general efficiency a Parr gas calorimeter, submitted and loaned by the Standard Calorimeter Company, East Moline, Ills.; a Doherty gas calorimeter, submitted and loaned by the Improved Equipment Company, of New York; an improved Junkers calorimeter, purchased from Junkers & Company, Dessau, Germany; and a calorimeter of the Junkers type, purchased from the American Meter Company, New York.

The results obtained with some of these new type instruments, as reported by the two laboratories, do not exactly coincide, and, while the errors obtained are not excessive, the discrepancies are great enough to warrant a continuance of the investigation as to the accuracy of these instruments in reading correctly the calorific value of the gas. However, the work has progressed sufficiently to warrant our making certain general statements as to some of the relative merits of these calorimeters.

That of the American Meter Company gives results sufficiently correct for general use and adoption by the members. This instrument embodies the general design of the original Junkers' instrument, and seems to have included the elements that have given that calorimeter its general high efficiency. It is modified, however, according to the recommendations submitted in the Committees' reports for the years 1908 and 1909, and is provided with accessories that read directly the heating value, making all measurements in English units.

The results of the two investigations on the Doherty calorimeter have not exactly coincided, and, while they have indicated that this instrument gives exceedingly close readings to those obtained on the Junkers, we feel that our work should be carried somewhat further before any definite statement is made.

In the report of the Committee (1908) it was recommended that the thermometers reading the temperature of the inlet and outlet water be placed on the same level. Such a type of instrument was purchased from the Junkers' Company, Dessau, Germany, and the tests on this one calorimeter do not accord with their original type of calorimeter, but were found to be 2 or 3 per cent. lower. This error, it is believed, is caused by a modification of its interior and exterior construction and not by the change of position of the thermometers.

The Parr gas calorimeter represents an entirely different method of obtaining the heating value of the gas. It is a dual calorimeter, and with it a comparison is made between the heating value of the gas to be measured and a gas of a supposedly known heating value. The design and operation of this instrument introduce elements that are not conclusively substantiated, and the results of the observations on this instrument by the two laboratories have been somewhat at variance. It is, therefore, considered advisable to continue this work to determine, if possible, the cause of these discrepancies. Therefore, additional tests will be made, and will be compared with those now being undertaken by the Bureau of Standards.

Further, the work of the Committee has been devoted towards checking the variations introduced by changing atmospheric conditions, and also towards determining the most advisable rate of gas consumption in some of the calorimeters under investigation. The results did not vary perceptibly from the statements submitted to the Institute in previous reports.

During the past year your Committee has been in touch with the Bureau of Standards, at Washington, which has been conducting a very complete examination into the subject of gas calorimetry. The Bureau has obtained instruments of many makes, and the investigation is proceeding along lines, the results of which, when made public, will be invaluable to the gas industry. This work has been undertaken by the Bureau at the request of gas interests, particularly at the request of the American Gas Institute.

After a conference with Dr. E. B. Rosa, Acting Director of the Bureau, and a visit to the laboratories, we are led to believe that it will be wise for us to submit a progress report until we learn about the result of this work, which is being made along lines parallel to the work done by your Committee in the past.

We wish to submit to the Institute a letter, just received from Dr. Rosa, in which he states that, so far as their work has gone, their conclusions agree in the main with those reported by your Committee. A copy of this letter is attached, as it outlines the work that the Bureau has undertaken in this field of research.

The Bureau of Standards, in its investigation up to this time, has called to our attention some features that should tend to increase the efficiency of operation, and which we thought wise to bring to your consideration. One of these matters is the application of a set of baffle-plates to the Bunsen burner in the Junkers type of calorimeter, that will tend to prevent loss of heat by reducing the downward radiation from the gas flame. These plates (three in number) are constructed of light metal with several holes to allow admittance of air; they are slipped over the stem of the Bunsen burner and placed about an inch apart, the upper one being about an inch below the top of the burner.

The lower plate is flat and extends to within $\frac{1}{8}$ to $\frac{1}{4}$ inch of the walls of the combustion chamber. The 2 upper plates are conical in form, and are placed with the apex down, the middle one having a somewhat larger diameter than the upper one, but less than the lower, or horizontal, plate, These baffles should each have 4 or 5 holes about $\frac{1}{8}$ inch in diameter, which, with the space between the plates and the combustion chamber, will permit of the passage of sufficient air for perfect combustion of the gas.

Such a scheme has increased the readings of some instruments investigated by the Bureau somewhat higher than 1 per cent., and should be generally adopted.

The sketch adopting Dr. Rosa's letter will assist the operator in constructing these screens where their purchase cannot be made.

For the best and most accurate work, and especially where the readings of the calorific power of the gas are made to comply with some regulatory order, it is always advisable to select the best grade of thermometers. These should be calibrated and the correction, if any, applied to the temperature reading.

One manufacturer of thermometers has brought up the subject of the stem correction, that it is necessary to apply if the thermometer is calibrated when completely immersed, which is the general practice, and that adopted by the Bureau of Standards. The stem correction is applied when the stem of the thermometer is exposed and at a different temperature from the immersed bulb. Such a correction is not usually necessary on the thermometer indicating the temperature of the inlet water, as this water, when operating under the directions formerly prescribed, is at the temperature of the room. However, the thermometer indicating the temperature of the outlet

water has a stem temperature of probably 15° below the bulb temperature, and, therefore, a correction should be made for the difference in expansion between the mercury and the glass.

The usual correction for a thermometer indicates the error in the reading when the thermometer is completely submerged, as compared with a standard thermometer, under the same conditions, and this correction can be readily applied for any point in the thermometer scale from the correction curve accompanying the thermometer. The correction for the emergent stem is somewhat more complicated, and can be explained in no better way than to refer to "Form 44," issued by the Bureau of Standards. A copy of that form is as follows:

*Correction for Emergent Stem (Thermometer).*—In general, all corrections are determined for total immersion, *i. e.*, for the condition where both bulb and stem of the thermometer are at the same temperature. If, however, the stem is emergent into space either hotter or colder than the temperature of the bulb, a stem correction must be applied to the observed reading in addition to the correction given in the accompanying table.

This so-called stem correction is very large, if the number of degrees emergent and the difference of temperature between the bath and the space above it are large. It may amount to more than 20° C. for measurements made with a mercury thermometer at 400° C. (750° F.)

For the glass of which this thermometer is made the stem correction may be computed from the following formula:

Stem correction = 0.000088 × n (T — t.)
n = number of degrees emergent from the bath.
T = temperature of bath.
t = mean temperature of the emergent stem.

The mean temperature, t, may be approximately measured by means of a small auxiliary thermometer suspended near the emergent stem, or by surrounding the latter with a small water jacket and taking the temperature of the water with the auxiliary thermometer, or, more accurately, in the way suggested by Guillaume, by exposing an exactly similar stem and capillary mercury thread beside the emergent stem, and thus measuring its mean temperature. This is also conveniently carried out with the "thread thermometer" (Fadenthermometer) of Mahlke, in which the expansion of the mercury in the capillary tube (bulb) is measured on a still finer capillary stem.

*Example.*—Suppose that the observed temperature was 85 and the thermometer was immersed to the 32 mark on the scale, so that 53 of the mercury column projected out into the air, and the mean temperature of the emergent column was found to be 70; then, Stem correction = .000088 × 53 (85 — 70) = 0.07.

As the stem was at a lower temperature than the bulb, the thermometer read too low, so that this correction must be added to the observed reading to find the reading corresponding to total immersion: *i. e.*, 85.00 ÷ 0.07 = 85.07. From the accompanying table of corrections it is seen that a further correction of 0.12 must be applied to the reading of the thermometer at this temperature, so that the correct temperature is 85.07 + 0.12 = 85.19.

In connection with the work this year we have commenced an investigation into the merits and defects of the small wet gas meter, which is in general use with most calorimeters, and also with most photometers. Our plan is to determine, if possible: First, the error caused when the gas passing through the meter differs in temperature from the water in the meter; second, the effect caused by gases of different degrees of saturation; third, the degree of accuracy with which the meter may be commercially relied upon to register.

There have been several calorimeters called to our attention by members as well as manufacturers, which present exceedingly interesting features, but which we have not been able to look into. We refer more particularly to instruments of the recording type, but we would advise our members to adopt them with extreme caution. Instruments of this type, while giving comparative results, do not, as a rule, give correctly the actual heating value of the gas, as determined by their indications, and such instruments should not be used for obtaining readings for inspection of regulatory purposes.

On account of the unfinished condition of the work that has been in progress this year, we suggest that the Committee be continued and be allowed to carry on the investigation during the coming year. If this is done it will also afford the Institute an opportunity to keep in touch with the work now underway at the Bureau of Standards, and also other investigations undertaken by several university authorities.

DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF STANDARDS,
WASHINGTON, October 6, 1911.

Mr. J. B. Klumpp, 1401 Arch street, Philadelphia—My Dear Mr. Klumpp: In reply to your inquiry, as to the present status of our calorimetric investigations, we beg to submit the following brief report. Our work as planned may be grouped under three heads:

1. The determination of the heats of combustion of a number of pure substances such as sugar, naphthaline, benzoic acid, etc., which the Bureau could then issue as standard combustion samples for use in checking up the results obtained with calorimeters of the Berthelot bomb type. This portion of the investigation is now nearly completed, and the Bureau has furnished during the past year a large number of such standard combustion samples to chemists and other technical men. These samples have already done much to reduce the results obtained by different laboratories to a uniform and comparable basis. Inclosed you will find a sample certificate which we issue with these combustion samples, and Bureau Circular, No. 11, which contains information concerning these samples and directs attention to important precautions in the use of bomb calorimeters.

2. An investigation of the leading types of industrial gas calorimeters, used in this country and abroad, with a view to ascertaining the order of accuracy attainable with the various calorimeters, the errors to which they are liable, and the necessary precautions that should be observed in their use. Considerable work has been done on this part of the investigation, but we are not yet in a position to render a report that would be of immediate assistance to your committee. We might add, however, that, so far as our work has gone, our conclusions in the main are in agreement with the excellent and painstaking investigations of the Committee on Calorimetry of the American Gas Institute. In addition to the intercomparison of these calorimeters, to determine their relative efficiency, this portion of the investigation will include a comparison with the bomb calorimeter, using several gases, to determine how nearly the results obtained with them are in agreement with the best known absolute values of lhe heats of combustion. There is one simple modification, rather, addition, to the flow calorimeters that these experiments have brought out, which we believe is to be recommended, by which the heat value found is raised by from 1 to 2 per cent. in the several calorimeters. This consists in putting on the stem of the Bunsen burner a series of disks, punctured with suitable openings to admit air, thus preventing the heat loss from the bottom of the calorimeter that takes place when the calorimeter is used in the usual way with open bottom.

3. The third part of the investigation consists in a determination of the heats of combustion of some of the more important gaseous constituents of illuminating gases in calorimeters of the Berthelot bomb type, using specially designed platinum resistance thermometers sensitive to 1 or 2 ten-thousandths of a degree, with a view to the establishment of a standard table of the heats of combustion of gases. So far as we can foresee at the present time, our work should be far enough along to enable us to submit to your Committee a detailed report at the next annual meeting of the Gas Institute. I can assure you that the Bureau will be pleased to render your Committee every assistance that it can in your important work, and will be pleased to hear from you or the members of your Committee as to any details of the work that in their opinion require special investigation, or the solution of which is of immediate importance to the gas industries.

Respectfully, E. B. ROSA, Acting Director.

The President said the discussion of this report had been put on the programme along with that of the Committee on "Thermal Value and Candle Power," and immediately following a paper on a "Survey of American Gas Photometry." He would like to hear a motion that the committee be continued. [On motion, so ordered.]

Mr. W. Cullen Morris here submitted the

REPORT OF COMMITTEE ON CAST IRON PIPES AND SPECIALS.

The Chairman of the Committee on Cast Iron Pipe and Specials begs to report as follows in regard to the work during the year:

The Committee reported last year that it had been unable to arrive at an agreement with the cast iron pipe founders, but believed, by making some revisions in the standards, that one acceptable to both the founders and the Institute could be prepared. With this in view, your Committee asked for continuance. Frequent conferences were held between members of the Committee and Mr. Lemoine, representing the United States Cast Iron Pipe and Foundry Company, during the year. At these conferences suggestions and modifications to the standard were made and found acceptable to the Committee, and sub-

sequent changes were made in the standard as previously prepared. Briefly the modifications are as follows:

That cast iron pipe should be as previously accepted by the Committee; that is, according to the specifications of the 1905 American Gas Light Association standard, except for the sizes 16-inch, 20-inch and 24-inch, which should be slightly changed in outside diameter so as to make the dimensions agree with those of the American Water Works Association standard, Class "A" pipe, and the Canadian Association; and that, for pipe heavier than standard thickness, increases in weight of pipe should be obtained by reduction of internal diameter, thus retaining outside or critical dimensions and insuring correspondence in dimensions with pipe and specials.

*Special Castings.*—All special castings revised as to critical dimensions, so as to agree with adopted pipe dimensions. Slight changes of special castings up to 12-inch were accepted as standard as displayed in the 1905 standard of the American Gas Light Association.

*Crosses and Tees.*—Crosses and tees, from 16-inch to 48-inch, were divided into groups, as displayed in the following table, so as to minimize as far as possible the number of patterns required and still provide specials of the least dimensions consistent with good design:

| Sizes. | Run, Inches. | Branch, Inches. | Spigot "S," Inches. |
|---|---|---|---|
| 16 by 6 | | | 27 |
| 16 " 8 | 14 | 14 | 28 |
| 16 " 19 | | | 29 |
| 16 " 12 | | | 30 |
| 16 " 16 | 17 | 17 | 32 |
| 20 " 6 | | | 27 |
| 20 " 8 | | | 28 |
| 20 " 10 | 15 | 15 | 29 |
| 20 " 12 | | | 30 |
| 20 " 16 | 19 | 19 | 32 |
| 20 " 20 | | | 34 |
| 24 " 8 | | | 28 |
| 24 " 10 | | | 29 |
| 24 " 12 | 17 | 17 | 30 |
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| 30 " 24 | 24 | 24 | 36 |
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| 36 " 24 | | | 36 |
| 36 " 30 | | | 39 |
| 36 " 36 | 28 | 28 | 42 |
| 42 " 16 | | | 32 |
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| 42 " 36 | | | 42 |
| 42 " 42 | 32 | 32 | 45 |
| 48 " 16 | | | 32 |
| 48 " 20 | | | 34 |
| 48 " 24 | 32 | 32 | 36 |
| 48 " 30 | | | 39 |
| 48 " 36 | | | 42 |
| 48 " 42 | 35 | 35 | 45 |
| 48 " 48 | | | 48 |

*Sixteenth, Eighth and Quarter Sizes.*—Sizes 4-inch to 12-inch, as before. Practically unchanged from the 1905 standard.

Sizes 16-inch to 48-inch laid out for both short and long radium bands. Spigot lengths in all cases have been altered so as to provide ample caulking room. In the ¼ bends, however, the 16-inch to 48-inch sizes are made to agree in laying length with crosses and tees.

*Eccentric Reducers, Hat Flanges, Bushings, Caps and Plugs.*—Remain practically as shown in the 1905 standard. Slight changes in dimensions were made to improve the fitting where thought necessary.

*Solid, Split, Hub and Service Sleeves.*—These were re-designed so that castings of a given size are interchangeable as to the bottom half, so reducing the number of fittings necessary to keep in stock.

*Line Drips and Side Pots.*—Slight alterations in design and provision for larger variety of capacities were provided.

*Generally.*—Every effort has been made by the draughting forces of two companies and of the pipe founders to check the detailed weights of specials and eliminate all possibility of error, and your Committee believes the standard to represent a satisfactory and well designed line of specials and would recommend their adoption.

C. C. Simpson, Chairman.

It was further said: Supplementing this I wish to state that the checking up of this work, and the agreement on the changes from our original standards, were made after consultation between Mr. Lemoine, of the United States Standard Pipe and Foundry Company, Mr. Simpson of the Consolidated Gas Company and Mr. Forstall of the United Gas Improvement Company. Mr. Forstall very kindly helped us in this work and is quite familiar with it, as he had done a great deal of the work on the original 1905 standard.

The President said he would add to what Mr. Morris said, something the latter was too modest to say. The report had been submitted to the Directors accompanied by large scale drawings, beautifully made, of every size of pipe. The whole work showed great care and consideration. The Directors having looked it over, adopted it, and recommended to the Institute that it be adopted. He, therefore would receive a motion that the report of the Committee be received and that the standards recommended be adopted. Were there any remarks?

Mr. W. Forstall said he would like to say a few words, not in opposition to the motion, but rather because he had been interested for a number of years in the subject. In 1898, the American Gas Light Association, at Niagara Falls. adopted a new standard, then they all went home and forgot about it. In the meantime, the founders went ahead and furnished the members with any old pattern that they had on hand. Now they had a standard which it was hoped would be adopted. Any pipe or specials that they ordered after the Institute proceedings were adopted should be as per the standard of the American Gas Institute. They would not necessarily get them; even the pipe founders would require time to prepare patterns; but they should, however, try to tie them to a definite date, whereafter the new or standard goods would be supplied. They were never in a better position for getting a new standard in operation quickly, because the Committee now reporting tried to get certain standards adopted about a year ago, and the pipe founders practically said, if those standards were adopted, they would not furnish them, in that they had patterns already made according to the 1905 American Gas Light Association standard. That, therefore, it was unjust for the Institute to adopt a new standard when the 1905 one was practically all right. As a result of that objection, the pipe founders consulted have agreed to the standard now proposed, and thus committed themselves to furnishing this standard, which was so nearly the standard of 1905 that no complaint could be made because of changes in patterns. It simply rested now with the members of the Institute, who could get the new standard if they insisted upon it.

Mr. A. E. Forstall, going a little further than Mr. Walton Forstall along the same line, said if the members of the Institute then present had not the full intention of using these standards, they should vote against adoption. He thought the greatest farce ever enacted in Institute or Association work was that adoption in 1898 and its immediate disregard. He felt it very keenly as he then was Secretary of the Association and thought it was a disgrace to the Association. He did not think any greater harm could be done to the Institute than by adopting standards simply to ignore them. If they were not prepared to order and insist on getting pipes and specials according to these standards, vote against them.

The President then put the question of accepting the standards which the Committee recommended for adoption. [Indorsed unanimously.]

Mr. Dewey said the

### Reports of the Wrinkle Department and of the Bureau of Information

would be taken up that afternoon; Section A to discuss the Wrinkles relating to the manufacturing department; Section B to discuss those relating to distribution work. All of the wrinkles would not be discussed, but they should all be read, and if one found a particular one on which to elaborate or criticize, such should be brought out for discussion.

The next matter for consideration was the

### Report of the Trustees, Gas Educational Fund.

The document dwelt at length upon the workings of the fund and detailed the operation of its administration during the year. It detailed that the inquiry started to determine the activities of the graduates of the several Classes up to the latter part of 1910. The graduates numbered 127, of whom 124 were living at time of this report, and information gained respecting 103 of this number: 95 continued in the gas industry, and 8 had gone into other lines; 64 of them had gained decided promotion, as between the times of their

graduation and their initial appearance practically in the industry. The advances ranged from draftsman to engineer, from storeroom clerk to manager or general agent. Then followed information secured from several of those engaged regarding the value to them of the instruction secured through their membership in the Practical Class. During the year 194 copies of the "Catechism of Central Station Gas Engineering" had been sold in the twelvemonth; 19 members of the Section for 1911 finished the course, and the Section of 1914 started last January with a membership of 56. Section for 1912 has 16 members; Section for 1913 has 6, wherefore the total membership in the current regular Class is 86. Two specials were receiving questions and answers, in the 1914 Section. The card index of articles published in the JOURNALS was being maintained. It was noted that but little use of the rooms available for subscribers to the fund (58 William street, New York) was being made. The surplus fund amounted to $14,282.72. The reports bore the attestation of the Finance Committee.

The reports were filed, and the Secretary announced that the

AWARDS OF THE BEAL MEDAL

for the best papers read, respectively, for the meetings of 1909 and 1910, were: Medal for 1909, to Mr. Charles J. Ramsburg (Philadelphia), for his paper entitled, "Sulphur Compounds in Illuminating Gas." For 1910, to Mr. Herbert W. Alrich (New York), for his paper on "Brick, Concrete and Steel Holder Tanks."

(To be Continued.)

[CONTINUED FROM PAGE 382.]

## PROCEEDINGS, SEVENTH ANNUAL CONVENTION, NATIONAL COMMERCIAL GAS ASSOCIATION.

HELD IN DENVER, COL., OCTOBER 24 TO 28, 1911.

SECOND DAY—MORNING SESSION.

The sessions were resumed at 10:30 A.M., and the President called for the

REPORT OF NOMINATING COMMITTEE,

which was presented by Chairman Frueauff, as follows:

Mr. Chairman and Gentlemen: Your Committee begs leave to submit the following names for office bearers during the ensuing year:

*For President.*—C. L. Holman, St. Louis, Mo.
*For First Vice-President.*—Percy S. Young, Newark, N. J.
*For Second Vice-President.*—C. M. Cohn, Baltimore, Md.
*For Third Vice-President.*—H. D. Schall, Detroit, Mich.
*For Treasurer.*—W. H. Pettes, Newark, N. J.
*For Directors.*—J. C. Rushin, Atlanta, Ga.; C. W. Wardell, Phila., Pa.; F. M. Roberts, Fall River, Mass.; C. W. Hare, Phila., Pa.; George Williams, Montgomery, Ala.

The President invited comment on the report.

Mr. Hare said the selections of the Nominating Committee were excellent ones. He knew Mr. Holman personally for years, and who as Vice-President of the Laclede Gas Company had done more, probably, than any other single man in the Southwestern country to develop the gas industry commercially. He had done much for the Association, although perhaps to many of the younger members present he was not as well known as some others who frequently appeared before them. When the speaker was appointed Chairman of the Committee on Membership and Local Sections to further the successful carrying out of their work, Mr. Holman was one of the first men approached. Extending the glad hand and assuring him of his active help, the speaker said he left St. Louis feeling that he had accomplished something, and he had gone from other cities carrying no such feeling. Having had repeatedly Presidents from the North, the East and the West, it seemed the time has come when the Southwest and the South should be represented. He happened to know that the Committee struggled in vain for a real Southerner for the position, man after man refusing to take up the burden. However, knowing what the chief executive must do in carrying on the work of a growing, active Association, they turned to Mr. Holman, than whom probably no other gas man in the Southwest was better known to-day with confidence. He felt convinced that, under his leadership, the Association would grow in a section of the country where to-day it was not well known. He, therefore, moved the acceptance of the report. [Seconded by Mr. W. J. Clark.]

The motion was adopted with an outburst of applause.

RESPONSES.

The President said it gave him great pleasure to introduce to them their President elect, Mr. C. L. Holman. In responding, Mr. Holman said:

Mr. President, who was and has been, ladies, and members of the National Commercial Gas Association: I was told yesterday I was supposed to take the Presidency for the coming year for reasons plainly stated by Mr. Hare. They could not find any other man in the United States who was willing to give himself to the work of this Association. [Laughter.] I was about the fifth choice; but I am glad to take it, gentlemen, under any condition. [Applause.] I feel it is a good thing. Sitting here yesterday while listening to President Stannard's speech, as he outlined the purposes of the National Commercial Gas Association and its scope, I fail to note that anything more can be done to push this Association forward than that which Mr. Stannard has done. Then I absorbed the beautiful flow of oratory from this down South man from Atlanta, heralding the beauties of that city and narrating to you how well they could take care of the people who would flock to Atlanta in 1912. In accepting this office I appreciate very deeply its responsibilities, and esteem indeed keenly the compliment you paid, not to me personally, but rather to Mr. Hare, Mr. Frueauff and the others who, as I stated before, were not able to get anybody else to take the job. I don't know very many of you, as Mr. Hare stated, which is my misfortune; but I feel that I want to get better acquainted with everyone of you, and that this will be the beginning of closer relationship between each, the members and myself. Referring to the show that is to be given in Atlanta next year, it seems only right to refer to a couple of cities who want this show a little later on. On this baggage check to Atlanta, on the end of which hangs a pendant, and which was distributed to the audience this morning, the pendant carries an invitation to you to meet in San Francisco in 1915. Gentlemen, there is a lapse of 3 years, wherefore it seems we should be not only up-to-date, but progressive. We should know what we will do in years intervening between 1912 and 1915. Next year we will move on Atlanta about 4,000 strong; but in 1913 should move 5,000 strong from Atlanta, by way of New York and Philadelphia to the sea. Then, having built our membership to 5,000 strong, from Atlanta to Philadelphia, I want you to return to St. Louis in 1916. Just a year ago in Boston you elected a man to the Presidency of this Association who has piloted you through your yearly voyage in a way most creditable to him and of much good to the Association. I felt a good deal of reluctance, when, as I stated before, being unable to find any other man who would take this job, they put it up to me. Knowing what Mr. Stannard and the other members of the organization had done, it seemed as though a pace had been set towards a mark striven for, which was somewhat above anything we might hope to get in succeeding years. We have had a year of his methods and his policies, and it seems to me that at this time this Association should be pretty well "Standardized" [laughter and applause], so perhaps my work is going to be comparatively easy. [Applause.]

The President said he knew that, after listening to the splendid address given them by Mr. Holman, they were all delighted with the selection and pleased with the new standard bearer. He would say there could be no question that the progress of this Association would be forwarded rapidly during the able administration which he was sure Mr. Holman would give the Association and its affairs. He was confident they all would give him the splendid, loyal support that they had given the speaker. Did they so do there was no doubt that when they meet next December in Atlanta they would all be proud of the achievements recorded and the progress gained by the Association. [Applause.]

The Secretary read several communications and letters, including these: From the Elks Home, Colorado Springs, offering the avails of membership; from the Colorado Electric Club, of Denver, in similar strain.

COMMITTEE ON GAS STOVE SPECIFICATIONS.

The President asked Mr. Hare to take the platform. Mr. Hare said: The attention of your Directors has been drawn to the fact that gas stove specifications adopted at the present time by certain gas companies differ in so many respects as to make it exceedingly difficult for gas range manufacturers to at all times meet the varying demands as to price and quality made upon them. Your Board believes that it should be possible for the gas companies to agree on the essential qualities entering into a well built and efficient range without holding the manufacturer down to the last detail of con-

struction. Believing further that the individual effort of the manufacturer to keep abreast, if not ahead, of the demands of the age is essential to the industry, we recommend that an earnest effort be made during the coming year to have simplified, uniform specifications adopted by the gas companies, after full, fair and free discussion with representative manufacturers. I, therefore, move that our President be requested to appoint a committee with this end in view. [Seconded, and adopted without dissent.]

The President appointed the following gentlemen to serve as the Committee:

O. H. Fogg (Chairman), New York City.
G. S. Barrows, Philadelphia, Pa.
J. E. J. Mayer, Chicago, Ills.
G. D. Roper, Rockford, Ills.
R. K. Clark, Chicago, Ills.
R. E. Sard, Albany, N. Y.
H. D. Schall, Detroit, Mich.

The President now introduced Mr. A. F. Traver (Supt. Gas Dept., Denver Gas and Electric Light Company), who read the following paper entitled,

## AN EXHIBIT AND DESCRIPTION OF A MODEL GLASS GAS WORKS.

Mr. Chairman and Gentlemen: This little glass, coal gas plant is the outcome of an effort on my part to familiarize the commercial men of some of the companies with which I have been connected with the methods employed in the manufacture of the gases which they are called upon to sell.

It is my belief that it is just as important for a commercial gas man to know the principles underlying the manufacture and distribution of gas as it is for him to know about the operation of the various appliances which he sells, and until he does know every detail of the business, from the time the raw materials are delivered at the works until the gas is finally burned in the consumers' appliances, he is not fully equipped to give the best service, either to the company he represents or to its customers.

In an effort to acquaint the representatives of our companies with the details of the manufacturing operations, I have been on my feet for hours at their meetings, talking myself hoarse, and when I finished I found the only thing they remembered was that coal gas was made from coal, that water gas was made from oil and steam, and that, some-way or-other, these gases finally landed in the holders and went out through the mains.

Trips through the gas works were equally unproductive of results. I found that the only impression left from a visit to the retort house was that it was a close imitation of the lower regions. They could not understand how humans could possibly work under such extreme conditions of heat and dirt, and seemed to be more concerned with the question of getting out of such a hot place than with observing the interesting operations which were going on.

In the condensing and scrubbing houses they were duly impressed with the great, black shells that towered way above their heads; but, not being able to see what was going on inside of them, paid more attention to the odors that are always present at this point than they did to the operation and purpose of the various pieces of apparatus which they saw. Their thoughts, on leaving these buildings, were not about the cleansing process through which the gases were passing, but rather on the question of how long it would take to get the ammonia and tar smells out of their clothes.

The meter room seemed to be a favorite. This room can be kept clean and neat, and had an additional advantage in that they could see the wheels go around in the dials.

The holders were impressive only on account of their great size, and their real function in the manufacturing operation was completely overshadowed by this fact.

They finally left the works fully impressed with the idea that the manufacture of gas was an exceedingly complicated process, carried on in a dirty, foul smelling place, and that the man who could fully understand the real operation was a wizard.

As a matter of fact, the manufacture of gas is an exceedingly simple operation; but, try as I might, I could not correct their former impressions until I had actually made gas before their eyes in glass shells, such as those composing this little experimental plant. By this means they were enabled to see for themselves the conditions actually existing inside the various pieces of apparatus, and could easily trace the gas from the retort to the holder. It is with the hope that such an illustration will prove of interest to the members of this Association that this paper and demonstration are presented. I will not attempt this morning to discuss the manufacture of water gas, but will confine myself entirely to coal gas. In this discussion I am going to try to avoid the use of technical expressions, and make my remarks as clear as possible, hoping, however, that they are not too ridiculously simple.

It was a well known fact, for years before the so-called discovery of coal gas, that ordinary bituminous coal in a fire burned first with a long, yellow flame, and later settled down into bright, glowing lumps, finally being consumed to ashes with little or no flame. The constituent parts of the coal, which form these long, yellow flames, are called the volatile fraction, and those producing no flame and burning like carbon, the non-volatile fraction.

In the year 1792, Murdock, an English scientist, in the course of some experiments on coal, discovered that these two fractions could be separated, in air-tight vessels, by means of heat, and conceived the idea of piping the volatiles, or gases, given off by the coal to various parts of his house, for the purpose of lighting it.

I will try to reproduce Murdock's experiment. He took an ordinary clay pipe, filled the bowl with fine coal and sealed it with clay. On heating this in his fireplace, he found that in a short time vapor began to come out of the end of the stem, which, when lighted, burned with the same yellow flame that he noticed when fresh coal was placed on the open fire. For a time these vapors continued to flow, but after a while they ceased, and even a greater degree of heat would not start them again, showing that the volatile portion had all been driven off. On opening the bowl of the pipe it was found to be filled with a silvery, grayish looking substance, which, when analyzed, proved to be practically pure carbon and ash.

*Experiment.*—This little pipe represents, in principle, the modern coal gas plant; the bowl is the retort and the stem the line of main leading from the retort to the point where the gas is used. The vapors are the gases we are now selling, the residue, we call coke.

Immediately after this, Murdock set about putting his discovery into practical use. He replaced the bowl of his pipe with a large iron receptacle, and the stem with ordinary iron pipes, and started in making gas on a larger scale. He found, however, that if he attempted to use the gas in its crude state, just as it came from the retort, his pipes quickly choked up with a black, semi-fluid substance, and that unless this was removed from the gas before it entered his supply pipes he could operate for only a short time. This substance we call tar. It is composed of those hydrocarbons contained in the coal which are volatile at the temperature of the retort, but fluid at ordinary temperatures, and if not removed from the gas before the temperature is lowered, will condense out and choke the pipes when at ordinary temperature.

After perfecting a method for removing the tar from the gas, Murdock found that, while he had no further trouble with his pipes, the gas, when burned, gave off such a strong smell of sulphur that it was almost impossible to stay in a room where it was burning. The problem of removing the sulphur from the gas proved simple, and for a time everything went swimmingly. It was soon discovered, however, that there was another impurity in the gas which soon corroded the brass burners and all other metal substances in the room. This impurity was found to be ammonia, and steps were immediately taken for its elimination. After this, no further trouble was experienced from any impurity in the gas, and no further difficulties were encountered from the gas itself. Even at the present time these impurities (tar, sulphur and ammonia) are the only ones we attempt to remove from the gas, and from Murdock's time until now all the efforts of the gas men have been devoted to the perfection of apparatus used in making the gas, removing these impurities and perfecting the appliances in which the gas is burned.

At first, all the so-called by-products of gas manufacture (coke, tar and ammonia) were considered absolutely worthless. Some of our older men can easily remember that, in the back yards of our cities where coal gas was made, great piles of coke were thrown on the dumps, as of no value, and our rivers and creeks were contaminated with the tar and ammonia liquors thrown out at the gas works. In recent years we have come to realize the value of these by-products and are now utilizing them for many purposes. To such an extent has this by-product business grown that, were it not for the money received for the coke, tar and ammonia, it would be absolutely impossible for our companies to supply gas at the rates now existing. Inasmuch as the magnitude of our business depends so much on the low rates at which we are able to sell our gas, in competition with other fuels and illuminants, the importance of the by-products can be clearly seen.

The modern coal gas plants are now on exactly the same general

(*Continued on page* 394.)

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NEW YORK, MONDAY, DECEMBER 18, 1911.

## BRIEFLY TOLD.

COMMERCIAL MEN AND THEIR RELATIONS TO THE AMERICAN GAS INSTITUTE.—In the paper covering a model glass gas works, read by Mr. A. F. Traver, of Denver, Col., at the recent convention of the National Commercial Gas Association (it is printed on page 391) the author states: "It is my belief that it is just as important for a commercial gas man to know the principles underlying the manufacture and distribution of gas as it is for him to know about the operation of the various appliances which he sells, and until he does know every detail of the business, from the time the raw materials are delivered at the works until the gas is finally burned in the consumers' appliances, he is not fully equipped to give the best service, either to the company he represents or to its customers." Should this criterion be accepted, the present ranks of the gas company representatives would be greatly depleted. However, that it will be a requisite in many cases in the not far distant future is a probability over which the energetic and aspiring salesman might do well did he so fortify himself; at any rate, in some degree. One method, which will greatly aid those desiring this knowledge, to acquire it gradually, that way being through class or junior membership in the American Gas Institute. That body works on common lines along which those interested in the technical phases of the industry may travel to discuss the problems of manufacture, distribution and sale of gas, and the younger elements will naturally receive attention in a like proportion to their activities in that body. The Institute is to be brought in closer touch with all of its members through the publication of a "Monthly Bulletin," and it is hoped that the question box will be the means of positively aiding those desiring information in technical subjects. Many active commercial men are now members, and undoubtedly many more will join during the coming year.—LUMINO.

NATIONAL ADVERTISING CAMPAIGN.—The National Commercial Gas Association is assuredly to the fore in respect of bringing to active fruition the plan of a National Advertising Campaign, which, having its beginning in the Presidential address of Mr. A. P. Ewing, at the Michigan's meeting last September, assumed actual shape the following October in Denver. Already great progress has been made, as witness this circular recently put forth by the Publicity Bureau of the National Commercial:

The biggest thing in the history of the N. C. G. A. was given birth at the Denver convention. It is the National Advertising Campaign. Not only was it given birth, but it is now being nursed through a thriving infancy. Of course, nothing will be done until the entire sum of money needed to carry on a year's campaign has been pledged, but the pledging is going on rapidly. The United Gas Improvement Company, for instance, in making appropriations for 1912, has set aside for each of the situations in which it is interested, one mill for every 1,000 cubic feet of gas sold in 1910, and this sum will be ready as soon as the needed balance is pledged. Note the number of cities involved in this one subscription alone. Remember that each city bears its pro rata share and will, of course, receive its proportionate benefit from the general advertising:

The Allentown (Pa.) Gas Co.
Burlington (Ia.) Gas Light Co.
Charleston (S. C.) Cons. Rwy. and Lighting Co.
Chester County Gas Co., West Chester, Pa.
Concord (N. H.) Light and Power Co.
Conshohocken (Pa.) Gas and Electric Co.
The Consumers Gas Co., Reading, Pa.
Des Moines (Ia.) Gas Co.
Fulton County Gas and Electric Co., Gloversville, N. Y.
Harrisburg (Pa.) Gas Co.
Merion & Radnor Gas and Electric Co., Ardmore, Pa.
New Gas Light Co., of Janesville, Wis.
Northern Indiana Gas & Elec. Co.: Hammond (Ind.) District; Michigan City (Ind.) District; Plymouth (Ind.) District; South Bend (Ind.) and Mishawaka District.
Northern Liberties Gas Co., Third and Brown sts., Philadelphia.
Omaha (Neb.) Gas Co.
Pensacola (Fla.) Gas Co.
The Peoples Gas Light Co., Manchester, N. H.
Philadelphia Gas Works.
St. Augustine (Fla.) Gas Co.
Savannah (Ga.) Gas Co.
Sioux City (Ia.) Gas and Elec. Co.
Sioux Falls (S. D.) Gas Co.
Syracuse (N. Y.) Lighting Co.
The United Gas Improvement Co., Vicksburg, Miss.
The United Gas Improvement Co., Waterbury, Conn.

The action of the United Gas Improvement Company demonstrates with peculiar emphasis the importance attached to the national campaign by leaders in the industry, because that Company maintains a highly efficient advertising department of its own, and might seem to be justified in refusing to participate in any national advertising on the ground that its own was adequate. On the contrary, it is the first Company, so far as we know, to actually provide its share of this splendid new business investment. And other big ones are ready and eager: The Doherty system, the American Gas Company and the Susquehanna Railway, Light and Power Company—all that have been consulted, so far as we know. This means that about 75 gas companies are ready to do their part as soon as a sufficient number of the remaining 1,100 + companies indicate a willingness to do theirs. Now, as we see it, it behooves every new business man in the gas industry to take pencil and paper and figure out what his company's share would be on the basis of one mill per 1,000 cubic feet of gas sold in 1910. He will be astonished to find what a ridiculously small sum it is. Then let him write to Mr. Louis Stotz, Secretary of the N. C. G. A., and say that his company will subscribe. The time for action has arrived. It is up to the men in the gas industry to see to it that they come into their own. Don't be too busy with other things to attend to this. Get too busy with this to attend to other things. If you haven't a copy of the Advertising Committee's report, Mr. Stotz will send you one upon request.

THE BALTIMORE PLAN FOR PROVIDING FOR THOSE WHO SERVED IT FAITHFULLY.—We are indebted to "W. W. H." for these particulars respecting the policy of the Company concern ed in insuring to faithful employees reward for labor well done: At the offices of the Consolidated Gas, Electric Light and Power Company, of Baltimore, the following statement was made with reference to the pension plan that was adopted at a meeting of the Board of Directors, held December 6, 1911. At a meeting of the Board of Directors, held a few months ago, upon the suggestion of President J. E. Aldred, a Committee of the Board was designated to inquire into and formulate a system of pensions for the purpose of making provision for the employees of the Company who, after long years of faithful service, had reached an age when they were unequal to the further performance of their duties. The plan which was adopted makes provision for the following employees:

1. Any employee who attains the age of 65 years, after 15 years' continuous service.

2. Any employee who, after 20 years' continuous service, is, by reason of permanent] physical or mental disability, unable to follow his usual employment in the Company's service.

3. Any employee who, after 10 years' continuous service, shall become incapable of continuing in service, by reason of injuries received while at work in the employment of the Company.

The detailed plan for the application of the pension principle to the classes above mentioned is such as to result in very liberal treatment of the Company's employees. It is provided that the entire cost of the pension system shall be borne by the Company. The system calls for no contributions from the employees themselves. Before adopting the plan outlined, a comprehensive survey was made of pension plans of public service companies in this country and Europe. Endeavor was made to provide a broad, liberal and equitable plan, one which gives substantial recognition to long and faithful service to the Company and the public. The Company believes that, by thus voluntarily establishing a system under which continued income will be assured to those who, after years of continuous service, are, by age or infirmity, no longer fitted to perform their duties, will be accepted as an expression of faithful and efficient service in the past and as an incentive for renewed effort to make the services rendered the public still more efficient and valuable. This system, the Company hopes, will increase among its organization a feeling of permanency in their employment and create an enlarged interest in the welfare of the Company and the community which it serves, with a desire to remain in and devote their best efforts to the services rendered the public. In commenting on the action of the Board of Directors of the Company, President Aldred stated: "The adoption of a pension plan is but another step in the distinct policy of the management of the Consolidated Gas, Electric Light and Power Company, of Baltimore, to recognize its duties, not only to the shareholders of the Company, but to its employees and the public." The pension plan goes into effect January 1, 1912, and affects all of the Company's employees, numbering about 1,600.

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DEATH OF MR. ALDEN M. YOUNG.—While Mr. Alden M. Young, whose death occurred at his home in New York city the morning of the 3d inst., might not be termed a member of the gas fraternity, nevertheless his activities in connection with the artificial lighting field (activities almost wholly involved with the electrical divisions thereof) were such as to bring him repeatedly in contact with gas men, by whom he was respected for his ability and esteemed for his personality. Deceased was born in Hadley, N. Y., September 6, 1853, and, having acquired a common school education, he engaged in the art of telegrapher, occupying desks successively at Saratoga, Albany, Syracuse, Buffalo and New York. In 1878 he organized the telephone exchange at Waterbury, Conn., and in 1890 built Waterbury's first electric light station. He then organized the Waterbury Traction Company, and later merged it with the Lighting Company. About the same time he also founded the New England Engineering Company and contributed largely to the successful introduction of lighting and railway plants in several New England cities. His work as an organizer in Waterbury and in connection with the various other enterprises in which he was the guiding spirit attracted much attention both in financial and electrical circles. He later came to New York and helped to organize the Kings County Electric Light and Power Company, of Brooklyn. At the 1898 Chicago Convention of the National Electric Light Association Mr. Young was elected President of that body, succeeding Mr. Samuel Insull. Early in life Mr. Young became associated with Mr. A. N. Brady and other financiers in many enterprises, and at the time of his death was associated with the following public service corporations, either as an executive officer or as a director: Albany and Hudson Railroad Company, American Gas and Electric Company, Connecticut Power Company, Connecticut Railway and Lighting Company, Corning Gas and Electric Company, Dayton Lighting Company, Edison Electric Illuminating Company, of Brooklyn, Electric Bond and Share Company, Fairmont and Clarksburg Traction Company, Kings County Electric Light and Power Company, New London Gas and Electric Light Company, Northern Westchester Lighting Company, Norwich Gas and Electric Light Company, Rockville Gas and Electric Company and the Stamford Gas and Electric Company. He was also a Director of the National Carbon Company and the Consolidated Engine Stop Company, and President of the New England Engineering Company and other industrial enterprises. Mr. Young was in business with his son-in-law, Mr. M. J. Warner, under the firm name of Young & Warner, manufacturers of railroad supplies, at 30 Church street, New York. He is survived by a widow and four married daughters.

AN ILLUSTRATION THAT ILLUMINATES.—"G.," writing from Binghamton, N. Y., under date of the 9th inst., says: That public service companies best serve their own interests when they serve those of clients, was practically demonstrated Thanksgiving week, in which interval the Binghamton Chamber of Commerce held an industrial exhibition. Both the Gas and Electric Light Companies engaged booths wherein, by means of elaborate displays, there were interestingly exhibited the newest and best appliances for industrial and residential avail. In this manner not only did the Companies obtain actual benefit from an advertising point of view, but increased materially the good feeling existing between them and the business men of the community, especially as both corporations incurred large expense and invoked much labor in suggesting and providing show features and lighting aids plus those to be seen in their individual booths. In fact, it proved altogether an impressive illustration of the homely fact that the better one knows either a corporation or a man the better will your liking be for one or both.

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CURRENT MENTION—

MR. RICHARD REES, Secretary of the Memphis (Tenn.) Consolidated Gas and Electric Company since 1902, has resigned that position, to accept a place on the staff of the Peoples Gas Light and Coke Company, of Chicago. His successor is Mr. J. F. Romier. of New York.

THE Gas Machinery Company, of Cleveland, O., has been awarded a contract for the placing of a 7-foot set of water gas apparatus, an exhauster and sundry other machinery in the works of the Freeport (Ills.) Gas Light and Coke Company. All of which goes to show that that big hearted, wholesouled General Manager (the only F. C. Weber) is continuing the excellent record that marked his first connection with the Freeport Company, a record that had for its beginning about every obstacle that could be encountered.

AT the annual meeting of the National Gas Engine Association, which was held the first week in December, in Cleveland, O., the officers chosen were: President, O. C. Parker, Racine, Wis.; Vice-President, H. W. Jones, Chicago; Secretary, Albert Strittmatter, Cincinnati; Treasurer, O. M. Knoblock, South Bend, Ind. The next meeting will be held in Milwaukee next June, when it is likely a great show of engines of different types is proposed.

THE New York, New Haven & Hartford Railroad Company has, in the form of a sub-lease, turned over the gas and electric companies that it controlled in Connecticut, through the medium of the Connecticnt Railway and Lighting Company. The new lessee is the United Electric Light and Water Company, of Connecticut, which is virtually a subsidiary of the United Gas Improvement Company. The gas supply of Waterbury, Norwalk, Naugatuck and Greenwich is included in the transferring.

THAT the proprietors of the Annville and Palmyra (Pa.) Gas and Fuel Company, actuated by the common sense business practice of Manager Miller, are making good in that territory would seem well proved when it is remarked that the Company (in operation less than 3 years) is arranging to construct an office building for its exclusive use on the lot at corner of Main and Lincoln streets, Palmyra.

MR. SAMUEL K. CAMPBELL, the clever gentleman who manages the McDonald lighting properties on Long Island, the main one of which is the Nassau and Suffolk County Lighting Company, with headquarters in Hempstead, has made another mark upon the public lighting of some of the roads that enable one to get about in comfort through the beautiful residential territory served by the Company named. The newest replacement of incandescent electric lamps as public illuminating factors by gas arcs is a matter of record respecting the lighting of Mineola, which have been in use since last fall. The lamps were installed and are being operated and maintained by the Company at a fixed price per lamp, under a contract that, we believe, will live for 3 years. During the past 5 years the public gas lighting of the township of Hempstead has been much more than doubled (the installation total is in the hundreds) and its effectiveness adds greatly to the utility of this beautiful section of New York State as a place of semi-urban residence.

MR. EDGAR P. SAWYER, President of the Oshkosh (Wis.) Gas Light Company, denies that there is the slightest truth in the statement that that property has not been offered for sale to Mr. Clement C. Smith, of Milwaukee, or to anyone else, for that matter. So writes a correspondent, under date of the 12th inst., and to this denial our informant adds: "Out here we are all pleased over this authoritative statement; for the Oshkosh Company, outside the pale of Sawyer ownership, would seem queer indeed!"

(*Continued from page* 391.)

principles as the old plants of Murdock, the only improvements being in the apparatus used in the different processes.

The coals used in gas manufacture are the pure, bituminous, coking coals. In testing these coals for their value in gas manufacture we pay particular attention to the quality and amount of the gas produced, the quality of the coke and the amount of tar and ammonia we are able to recover. The average good gas coal, under good operating conditions, produces per ton about 10,000 cubic feet of gas, 1,300 pounds of coke, from 10 to 15 gallons of tar and from 4 to 5 pounds of ammonia.

This coal is received at the works from the mine, and is unloaded on to the stock piles, or into the coal buggies, for immediate use in the retorts. It is important that the coal be used as quickly as possible after being mined, for this particular kind of coal deteriorates very rapidly when exposed to the weather. After being unloaded, the coal is broken into lumps about 3 or 4 inches in diameter, and is then ready to be charged into the retorts.

The early retorts of Murdock were of iron, and this material continued in use until comparatively recent times. However, as higher temperatures began to be used in the manufacture, these iron retorts quickly burned out, and fell to pieces so rapidly that the cost of their use was prohibitive.

The modern retorts are built entirely of clay, and are of various shapes, sizes and lengths. In cross-section they are usually round, oval or D-shaped, the latter being the most popular. In size they are from 14 by 26 inches to 16 by 28 inches, and in length from 8 to 20 feet. The walls and back are usually about 4 inches thick, except at the front, where they are made thicker to withstand the strain of holding the mouthpiece in place.

The early retorts were heated in an open fire, but it was soon found that the cost of the fuel used in heating the retorts in this manner was excessive, and an arch was built over the retort. This resulted in a considerable saving in fuel, but it was soon found that two or more retorts could be heated by the same fire, under the same arch, without a material increase in the fuel consumption. This idea has been further developed until now as many as 12 retorts are heated by the same fire. A number of retorts heated by the same fire, and inclosed by the same arch, is called a coal gas bench. Numbers of these benches placed side-by-side or back-to back are called a stack of benches.

In a further study of the question of fuel consumption the modern bench has been still further developed. In order to completely drive off all the volatile matter in the coal, it is necessary that the retorts should be heated to a temperature of practically 2,000°. In the old type of bench, on account of this high temperature, flue gases were thrown out from the stacks at about the same temperature, and on account of this a great deal of the fuel value of the coal used in the fires went up the stack and was wasted. In order to utilize this heat we have resorted to gaseous firing. The old firing boxes have been deepened and formed into gas producing furnaces and passages, and flues have been constructed, along the sides of this producer, in such a manner that the heat of the waste gases is utilized to heat the air used in the combustion of the fuel in the furnace. The old style of bench without the producer was called a plain setting bench, and the newer types, containing producers, flues and air passages, are called gas-fired, or recuperator benches. These improvements have resulted in an enormous decrease in the cost of bench fuel and are now in use in practically every coal gas plant in the country.

In this little experimental plant it is impossible for me to show the clay retorts or the arrangement in benches. For this purpose I have used a small piece of 2-inch pipe.

The retorts in the coal gas benches are charged with a uniform layer of coal, either by hand or by machinery. The retort is then sealed up air-tight, and the heat of the fire drives off the volatile matter of the coal. This process is usually complete in from 4 to 6 hours. The retort is then unsealed, the coke drawn out and a fresh charge introduced. For convenience in operating, there is attached to the front of the retort an iron mouthpiece. This is the same shape as the inside of the retort, about 15 inches long. At the front end a door is provided, which may be opened for the introduction of coal, and then closed to make the retort airtight. Into one side of this mouthpiece a pipe is introduced for the purpose of taking the gas away from the retort as it is formed. This pipe is extended to the top of the bench where it is turned down into a larger pipe, which is partially filled with water. This piping is so arranged that the pipe from the retort dips into the water about an inch. This is for the purpose of providing an automatic valve, whereby the gases contained in the larger pipe, called the hydraulic main, cannot flow back through the pipe leading from the retort into the air when the mouthpiece door is opened. At the same time it provides an easy access for the gas formed in the retort, which can bubble through this water and be taken away.

The gases issue from the retort at a temperature of about 700° to 800°, and at the hydraulic main are reduced to a temperature of about 300°. The gas at this point contains all the impurities, and we are now ready to start the purifying operation. The first requisite in the elimination of tar is a reduction in temperature. This is accomplished by means of some sort of a condenser or cooler. In many works this is simply an extended line of pipe exposed to the air. The hot gases flow through the pipe and are cooled by the air circulating around the outside. In other cases a shell is built, containing tubes, quite similar to the ordinary steam boiler. The gases are forced around one side of these tubes and water is circulated on the other side.

It is our aim at this point, to reduce the temperature of the gas to about 100°, at which point it is necessary to remove the tar. Coal tar, at temperatures below 100°, has a strong affinity for the illuminants in the gas, and if it was not removed before it fell below 100° in temperature, the illuminants would be dissolved from the gas and the quality very much impaired.

From this first condenser the gas is led through pipes to the exhausters. The function of these exhausters is to pump the gas from the retort through the various pieces of apparatus in the works into the holders, and at the same time to maintain a uniform pressure on the retorts. Retorts built of fireclay are quite porous, and if they were operated under any great degree of pressure the gas would go out through the pores of the retorts and be wasted. On this account, the exhausters are so regulated as to give practically atmospheric pressure inside of the retorts. The exhausters themselves are built exactly the same as the little pressure air blowers which the industrial fuel men utilize in their various appliances. This blower, or exhauster, is run by either a steam engine or a motor, which is governed by the pressure in the retort.

In the exhauster the gas is still at a temperature of 100°, and the next piece of apparatus encountered is the tar extractor. There are various forms of apparatus for removing the tar from the gas, but the one in most common use is called the P. & A. In this apparatus the gas is forced to impinge in small streams on a solid plate, and the small globules of tar which are present in the gas run down along the plates and are removed from the machine. The simple process of bubbling through water will accomplish the same result, and this form of apparatus is used in many works. In our little experimental plant this latter principle is utilized.

The gas now being free from the tar is run through another condenser of the same form as the first one, where its temperature is reduced to 70°, and we are ready to remove the ammonia from the gas. This is accomplished by means of water, this water having the power to dissolve out the ammonia from the gas. The first piece of apparatus for the elimination of ammonia is called the washer. In this machine the gas is forced to bubble through water and in this way the major portion of the ammonia is dissolved out.

From the washer the gas goes to a tall, cylindrical shell, type of tray, so designed as to break up the flow of gas into small streams. Water is sprayed over the top of these trays and, in percolating through, meets the gas in its upward flow in a sort of scrubbing action and dissolves out the last traces of ammonia. It is from this scrubbing action that the apparatus derives its name. The gas has now been freed from its tar and ammonia and the only impurity left to be removed is the sulphur. The elimination of the sulphur compounds takes place in large iron or concrete vessels, called purifiers. The sulphur compounds existing in the gas are mostly in the form of hydrogen sulphide, $H_2S$; the material formerly used and at present used in some of the smaller works is lime. The elimination of the sulphur compound is due to the chemical action between the lime in the boxes and the hydrogen sulphide in the gas. The formula is a rather complex one, and I will give you simply the general outline. The chemical formula for lime is CaO, calcium oxide, and the chemical formula for hydrogen sulphide is $H_2S$. The reaction taking place is in principle as follows:

$$CaO + H_2S = CaS + H_2O.$$

In other words, the calcium in the CaO compound combines with the sulphur of the $H_2S$ to form calcium sulphide, and the hydrogen unites with the oxygen to form water. The lime is placed in the

boxes in layers, and the gas is caused to flow through it in small streams between the different layers of the lime, and the above reaction takes place until all of the lime has been changed to calcium sulphide and is no longer able to combine with the sulphur. In this condition the material is worthless, the cover is removed from the box, the calcium removed and thrown away, fresh lime is substituted and the process continued. The use of lime in this connection is very expensive, and has the additional disadvantage that the calcium sulphide is of no practical use and has a very bad odor, resulting in serious complaints from the city authorities when it is thrown on the dumps. Comparatively recently the use of a new material has been developed for the purification of gas, and this is working out very satisfactorily. It is a material composed of iron rust mixed in with a suitable proportion of ground corn cobs, shavings or other material of this nature, in order to give the combination porosity. The chemical reaction in this case is as follows, in principle:

$$Fe_2O_3 + 3H_2S = Fe_2S_3 + 3H_2O.$$

Please bear in mind that the above formula is not exactly as the chemical reaction takes place, but it represents it in principle. In this way you can see the iron in the oxide combination combined with the sulphur of the hydrogen sulphide to form ferric sulphide and the hydrogen again combines with the oxygen to form water. In the purification of gas this material is used in the same manner as the lime (in layers) until all of the iron in the original oxide combination has been changed to ferric sulphide. This spent material is then removed from the box and fresh material substituted. The old material, when removed from the box, is spread out in the gas works' yard in such a manner as to expose it to the air. In this manner another chemical combination takes place between the ferric sulphide and the oxygen of the air, in principle, as follows:

$$Fe_2S_3 + 3O = Fe_2O_3 + S.$$

In other words, the iron goes back into the same chemical compound as it existed originally and the sulphur is thrown out as free sulphur in the bulk of the material. This material can now be used again to purify gas in the same manner as if it were new material, and can be used over and over again in this way until the free sulphur eliminated from the material is equal to about 50 per cent. of the weight of the material, at which time it becomes practically worthless, as the small particles of sulphur by this time have entirely coated over the small particles of iron, so that the gas cannot get to them. Being able to use this material over and over again has resulted in a material decrease in the cost of purification.

The gas has now been freed from all its impurities and is ready to be distributed to the consumer. For the purpose of finding out our costs, and some of the other items which are necessary in the practical running of a company, it is necessary for us to know the amount of gas which is produced, so at the outlet of the purifier there is installed a device for measuring the gas as it is made, called a station meter. I will not undertake to describe in detail the construction of this piece of apparatus, but will simply say that it correctly measures all of the gas which passes through it. The gas is now conducted through pipes into the holders and from the holders is sent out into the city.

[Mr. Traver then gave an actual demonstration of the manufacture of gas, using for this purpose a small glass gas plant, showing the operation from the time the coal is put in the retorts until the gas is burned at the burner.]

The President here introduced Mr. Thomas R. Elcock (Advertising Manager, U. G. I. Co., Philadelphia), who read a paper on

## UP-TO-DATE ADVERTISING METHODS.

Advertising, which not so very long ago was considered a mysterious and somewhat intangible branch of business, has now become reduced to almost an exact science. Common sense methods have taken the place of random, hit-or-miss operations, and the result is a more concrete grasp of means and results.

A great mistake formerly made was to consider advertising merely a matter of faith. Now we know that it is a matter of faith *and* works, and it is with the works (or system) employed in advertising that we have now to concern ourselves. It is true that without faith in the efficacy of our publicity efforts we cannot hope for success, but it must not be a blind faith; rather, it must be based upon action which experience and intelligent discrimination teach us is correct. Before going in detail into the methods employed in modern advertising, let us consider briefly an outline of the conditions which the publicity element in the gas business faces at the present time.

We know from our experience that advertising is a great aid to selling our appliances, to increasing consumption and to creating in the public's mind a friendly feeling based upon proper knowledge of what we are doing and why we are doing it. We realize, too, that we have an advantage over other lines of business which advertise, particularly in our direct advertising, for our intimate association with our consumers permits us to keep complete and accurate lists of prospects, so that every piece of printed matter sent out by us should reach a person who is in the market for the thing advertised.

We must pay strict attention to the systematic distribution and following up of our publicity matter. We must devote to our follow-up systems considerable study and create the utmost harmony of action between the advertising and selling forces. A plan of action must be arranged and adhered to. We must consider what character of advertising is best suited to our purposes and how it can best be secured, with respect to both the creative and physical elements entering into it.

It is not necessary to employ argument to show that advertising pays in the gas business. Whenever advertising has been done results have been noted which abundantly prove its value. Where return postcards and folders bearing return messages have been carefully sent to live prospects, the percentage of answers and the sales following them have more than warranted the expenditure, and the sales influenced by them could never be definitely calculated. Furthermore, following the appearance of a striking newspaper advertisement, a jump in sales and the increase of visitors at the gas appliance display room have almost invariably been observed.

As to our advantage over other lines of business in the way of direct advertising, it need only be pointed out that advertisers as a rule must count upon a tremendous amount of waste, because but a small percentage of persons addressed by them are really in the market for their goods; but with us it is different. We know so well who are our prospects, in what they are interested and in what manner they may best be reached, that very little is left to chance. Our remarkable advantages in this respect make of our direct advertising perhaps the surest means known to the profession of publicity for creating sales.

By direct advertising I mean advertising which goes direct to the consumer, either through the mails or by messenger. We have a unique advantage, in that, by means of meter and service applications and the visits of our representatives to homes and business places, we are able to keep a complete and accurate running file of prospect cards, on which are indicated those appliances which any given consumer does not but should possess. This means that we have only to go with our advertising matter and our representatives to those homes or places of business and work persistently for those potential orders which we know to be there. The element of uncertainty is minimized; it is mainly a question of how well we perform our part.

The method of distributing advertising matter, following it up and checking results is a recent development. In the case of the newspaper advertisement definite and accurate checking is impossible, but in direct advertising a certain system can be maintained. I do not mean to intimate by this that newspaper advertising is not valuable to our industry. Newspaper advertising is a study in itself, and has great possibilities if well done. In this I consider the most valuable type to be the consecutive talk, a short, newsy diary of interesting facts that appear in the daily paper each day, or not more infrequently than every other day.

Gas possesses inexhaustible facts of real interest to the public. We, in the industry, are liable to minimize the importance of such facts as news items. It is interesting, for instance, for our public to know of the work performed and being performed by their gas company, of the great system required to carry on the supplying of gas, of the vigilance necessary to insure an ample supply at a proper pressure, of the care exercised in testing and selecting the appliances sold by the company, of the many improvements in gas and appliances from time-to-time, and of the pride and interest taken in the situation by the company; in short, these should be "boost talks," interesting, crisp, gossipy and newsy. Such advertising, in my estimation, is more valuable than a picture and price of an appliance, or what we broadly term display advertising. As I have already said, we cannot expect to check definite returns from such advertising, but we will gradually and unmistakably feel its influence; sales will result from it, for such a campaign should contain considerable straight selling talk. There naturally arise many opportunities to refer to appliances, conveniences, economies, etc. You must have faith in

such advertising at first; you will have faith in it before many months running.

An important problem in direct advertising is to quickly and accurately move our printed matter—to make it actively reach out after business. Unless we can come to consider our printed matter in a somewhat human sense—that is, imbued with the same living attributes as a human being in influencing purchases—we cannot get full value out of it. This, unfortunately, is not always done. Too many business people regard a stack of folders or leaflets as so much dead stuff, to be gotten rid of in the easiest and quickest way. We must not take that attitude toward printed matter. It is not giving the advertising a fair show. We can only put so much human attribute into the pictured or worded message; and, after all, it must have live men back of it in order to retain the breath of life it possesses.

The best possible quality of advertising matter sent broadcast indiscriminately, or sent to the right place without being properly followed up, would yield but little. We must take into consideration the mental attitude of the prospect when that piece of advertising is received, anticipate the objections or obstacles that may arise and plan to meet them one-by-one, squarely and systematically, and according to the laws of mind and selling experience.

It can be said without fear of successful contradiction that fully 25 per cent. of the money spent for advertising in the United States might just as well be deposited upon a scrap heap. This does not necessarily mean that the advertising itself is not good. The copy and illustrations may be excellent and yet result in no appreciable returns. For the fact of the matter is that the copy is only the first step in a successful advertising campaign.

In considering direct advertising it is important to have a careful system, whereby the selling leads may be properly followed up and the orders properly taken care of. The circular letters, folders, return post cards, and the like, must be carefully placed in the hands of the right prospects, in the right way and at the right time, and even then, there will be very few chances of making sales unless the selling force works in unison with the advertising pieces and carefully develops the desire to purchase which the printed matter has created. The salesman must be thoroughly acquainted with the character of the advertising, so that, in talking to the consumer, he may dwell upon it intelligently. Even when this is done, it is very often impossible to clinch an order on the visit. In this case, the salesman must carefully fill out his back call and further advertising matter must be sent so as to reach the prospect in the logical time preceding that call. If this should not result in a sale, the same order should be repeated. The fact is that good advertising combined with good salesmanship should be cumulative, and our experience shows that fully three pieces of advertising matter followed closely by visits from the salesmen are often necessary in order to effect a sale.

It is very common to learn of several folders advertising different appliances being sent out to all prospects at the same time and the matter there permitted to drop without any further follow-up effort on the part of the selling force. This is illogical and absolutely unprofitable. Unless the organization of a company is such that direct advertising may be systematically followed up, it is unquestionably better to not attempt this form of advertising at all.

Closely akin to the necessity of keeping advertising matter logically on the move is the further necessity of harmonious relations between the advertising and selling forces in all their operations. To do this, it is imperative to have in the advertising department not only good copy writers and arrangers of printed matter, but also a thoroughly equipped clerical force, and in addition to this, a system man with one or more assistants. The man who is applying his mind constantly in a creative direction is seldom a business man, and even if he were, it would be difficult for him to find the time to attend to both branches of the work. The system man is in reality an intermediary between the advertising department and the selling force and meets the salesmen in each of the district offices periodically, discussing with them selling methods, the results being secured at the time, and invites from them suggestions calculated to better harmonize their workings with the advertising department. These suggestions, together with his own ideas derived from personal contact with the salesmen, he edits and arranges in concise form so that the advertising manager may devise plans to meet the current needs. He also oversees the distribution of advertising matter and carefully investigates to determine that it is being sent out at the proper time and to the right prospects and followed up promptly by the salesmen. He goes over, from day-to-day, the return post cards received from prospects, notes the orders resulting from them and whether or not these orders have resulted in further sales of other appliances. He also keeps running various reports showing from day-to-day the condition of sales, and analyzes the failures and successes met with. In this way it is possible to prevent continuous waste in unprofitable directions and also to devote more of the appropriation to those lines in which best success is encountered.

As time goes on, it is hoped that the system man will be able to extend his services almost indefinitely. For instance, in a large city it should be possible to save a great deal of effort and money by carefully classifying prospects for different appliances. The mere fact that a woman does not use a water heater need not be taken as a guarantee that she is a live prospect for one. It may be that, on account of being financially irresponsible, or some like reason, this woman could never be expected to make a satisfactory purchase of a water heater. Obviously it would be a waste of time and money to continue sending printed matter to her and having it followed up by salesmen. Would it not be advisable at times for the system man to send out a number of investigators to study these conditions and classify the prospect lists accordingly?

In a large city there are tens of thousands of people who do not read English, and, of course, the mailing of advertising matter in English to these people is a pure waste of money. It is possible for the system man to classify the prospect lists, so that advertising matter printed in the respective languages may reach these people. When this is done, it is positive that a great improvement in sales will be noticed.

Advertising is so closely allied with salesmanship that the sales manager and advertising manager in any situation should be either one or closely related. Advertising is something entirely different from what it was once held to be. It does not consist in merely writing and placing copy, but it consists in creating business in the broadest sense of the term.

With reference to the character of advertising matter to be sent out and the method of preparing it, we must begin with the men who are engaged to do this work. It will, I think, be quite generally agreed that a knowledge from the inside of the intricate conditions existing in the gas industry is required in order to properly convey to the public the ideas for which we are striving; and this means that the men who are to pass our message on to the public should be right in the company office, in constant touch with all branches of the business. The policies of the president or manager of a company, the ideas upon which the business is to thrive, cannot be grasped in a few hasty interviews by an outsider, but must be gradually absorbed by constant and intimate association. And the man who is to make a business grow by advertising must know all about it; he must not have a merely superficial knowledge.

Obviously, the small independent gas company cannot afford to hire the talent nor pay for the class of work which would be best for its purpose. The syndicate can afford it and is doing it. Manufacturers of appliances are also doing much in the way of supplying copy, cuts and forms to their patrons. These forms would be suitable, excepting where local conditions are dealt with or appliances named which the particular independent company does not handle. In most of the advertising matter being put out it is possible to avoid these definite references. Take, for instance, a folder designed to popularize the idea of an "All-Gas Kitchen." It is lithographed in a number of colors so as to make an attractive appearance when received in the mail. Inside is an illustration of a woman sitting in a kitchen reading a book while dinner is being cooked in the cabinet range. The range and water heater bear no name plates and are illustrative of type rather than a particular make. The text describes the comfort and other advantages to be derived from the use of gas in the kitchen. No prices are given. Every word of it applies to conditions in every city. As to the company's name, this can be easily changed on the printing press with scarcely any addition to the cost.

Where the same newspaper advertisement is used in different cities it may be supplied in electrotype form, with a space at the bottom mortised out so that the company's name may be set in this space by the printer of the local paper. The classy type dress of an advertisement has much to do with its pulling power, and the desired effect can be best secured by an expert job printer. Therefore, the syndicate advertising department has this part of the work done and sends out metal casts of the advertisement which may be inserted in the local paper. Very often the man on the local situation wonders that his advertisement should show up to so much better advantage than

others in the paper, not knowing that it had probably been set up and torn down several times at the home office before the desired effect was secured.

Nothing that is mediocre is worth the space that it takes up. Further than to lay stress on this point, it would be impossible in this paper to go into details describing how the actual work—creative and physical—is done. Enough to say that every word of a piece of copy, every detail of an illustration, must be given the most careful thought and scrutiny to obtain accuracy and force. We must not trust to an artist nor an engraver, for instance, to get up an illustration after his own notions as to how our prospects can best be impressed. We who come in contact with the consumer, and who know the points of the goods which should appeal to him, are in the best position to decide how the matter should be presented. It is often necessary, in addition to furnishing models and photographs for a picture composition, to send the work back to the artist several times in order that the important details may be strikingly depicted. So, too, the matter of color schemes, arrangement of the messages on return postals, and the like, should be considered according to our knowledge of the prospect and how he can best be approached.

The most effective advertising for one line of goods and to one class of purchasers may prove futile when applied to another line of goods and another class of prospects. Ask a successful merchant to describe his method of selling and he will tell you: "It all depends; go out on the street and bring me a possible purchaser and I will tell you how I would sell to him." It is the same in advertising; you must fit the particular article to the particular needs of the particular class of people you wish to reach.

The advertising man for a gas company is engaged to sell service and appliances. His company has no words nor pictures to sell, nor is it desirous of selling the personality of the man himself. Therefore, words, pictures and the copy man's personality should be used only in so far as they properly call attention to the commodities that are for sale. In other words, we must sink every other feeling and proclivity in our efforts to merge ourselves into the very soul of the business we are to exploit, and then our work will have stamped upon it sincerity, the important mission of that business. Our utterances will then impress and convince, whereas the most clever writing, if done in a flippant or supercilious style, will call attention to the writer rather than to the goods.

Talent for writing and ingenuity for originating striking effects are essential, but these must be governed by a knowledge of the business, of your company's policies, and a big, inexhaustible fund of good common sense.

(To be Continued.)

## Management & Commercial Methods.

THE NEW HUMPHREY NO. THIRTY GAS LAMP.—One of the most important of the new lighting appliances shown at the Denver gas appliance exhibition last October was a new type of gas arc lamp, the "Humphrey, No. 30," illustrated in Fig. 1. It was exhibited by the General Gas Light Company. The aim of the makers was to produce an ideal maintenance lamp, and while the new type has a like outward appearance to the older Humphrey inverted lamp, the mechanism has been entirely changed and simplified, with the result that it will operate efficiently over a greater range of gas conditions than any other lamp heretofore produced. In addition to this, the efficiency has been increased to over 37 candles per cubic foot of gas. The test for the latter was made by the Electrical Testing Laboratories, at 3.5 inches pressure, the lamp being equipped with a clear globe and no reflector. The gas consumption was 12.28 cubic feet; maximum candle power, 458.

The three most important features of the new mechanism are: The one-piece, removable valve; the vertical cartridge screen; and the single needle-point gas adjustment and air mixture baffler. The valve may be removed by simply loosening one bolt, as shown in Fig. 2. These valves can be removed and replaced in less than ½ minute, and are interchangeable for all sizes of both indoor and outdoor lamps.

The gauze or screen consists of a vertical cartridge, placed in the burner head close to the point of combustion. With one turn of the pliers the screen can be removed for inspection or cleaning, as shown in Fig. 3. The screen being in a vertical position it is largely self-cleansing, as the dust and dirt fall to the bottom of the screen instead of lodging in the gasway. The position of the screen is shown in Fig. 4, at the center opening between the burners.

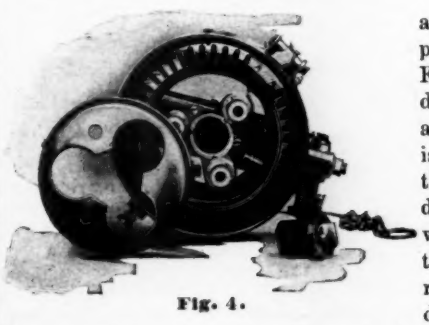

Fig. 4.

The simplicity of the lamp and the small number of parts are well illustrated in Fig. 5 (see p. 398), the lamp dissembled. When maintenance figures are excessive it is generally due to the fact that lamps are either turned down or not turned on full, with the result that the mantles carbonize. The Humphrey No. 30 can be turned down, and when this was demonstrated at the "Show," much favorable comment was heard. The demonstrator turned the lamps down so low as not to incandesce the mantles, yet they burned without carbonizing or lighting back.

These features of the new Humphrey No. 30 inverted lamp show that both the maintenance and efficiency records of the original Humphrey upright lamp are to be broken for the first time by an inverted lamp.

GAS FURNACES IN THE ENGLISH MINT.—That the mechanical work done in the course of a year in the English mint is on a vast scale may be readily understood when the remark is made that, during the year 1910 the huge quantity, by weight, of gold, silver, bronze and nickel melted weighed 1,251 short tons. Since 1908 the Deputy Mas-

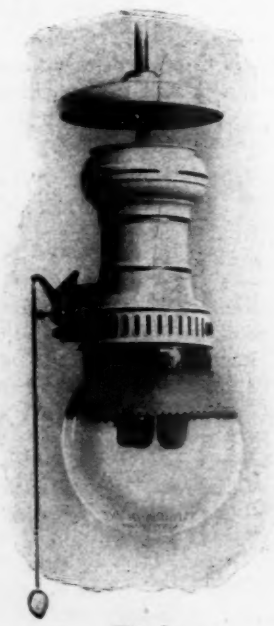

Fig. 1.

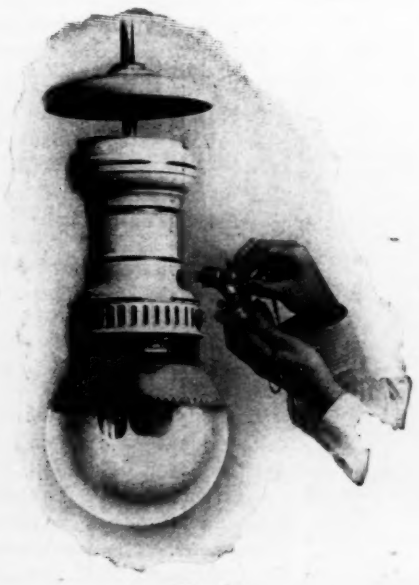

Fig. 2.

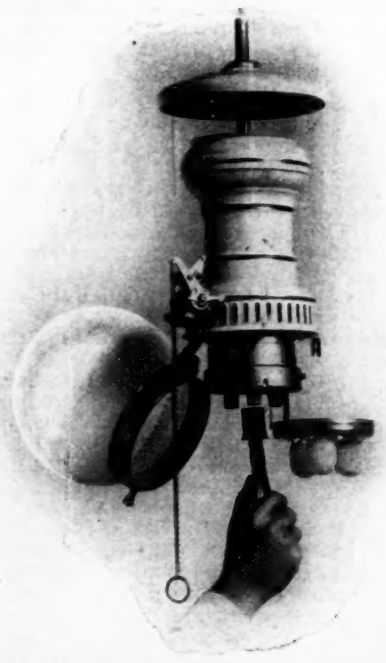

Fig. 3.

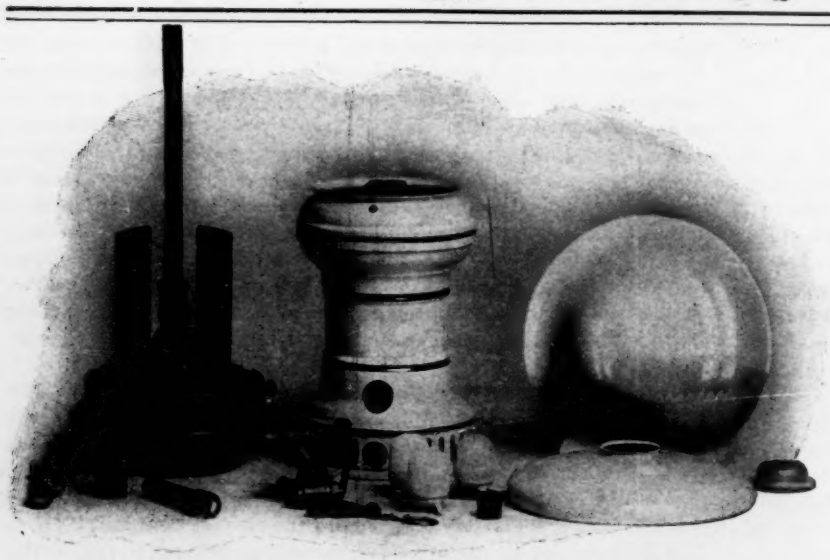

Fig. 5.

ter-Controller (W. G. Ellison-Macartney) has been authorizing the making of experiments looking to the substitution of gas and oil for coke in the melting of metals. Since 1909 great strides were taken in perfecting the method and manner of using gas, until now (1911) the results obtained from gas under air pressure (so says the *Gas World*) have been very satisfactory, especially in respect of gold melting, where the cost of fuel for working standard gold bullion has been reduced from 14 cents to 10 cents per cwt. Further, the crucibles stand on an average 50 per cent. higher heats, and the endurance of furnace linings shows no shortening. Regarding the preliminary experiments which led to the adoption of gas furnaces, Mr. Edward Rigg, the gentleman in charge of the operative section, notes:

"These experiments have involved the preparation of many designs for furnaces of various sizes and the testing of a number of burners for obtaining high temperatures, some specially designed and others of patterns already in use in various trades. Electric furnaces were also experimented with, but even had the cost of working such a plant as could have met the demands of the Mint not been prohibitive, this type of furnace does not lend itself to the melting of precious metals, where the entire charge must be recovered daily for accounting purposes, and it is not possible to effectively stir the alloy—so essential in the case of bullion for coinage.

"Oil furnaces burning both petroleum and creosote oils were tested under very varying conditions, and with air at pressures varying from 2 pounds to 25 pounds. While it seemed clear that at present prices the oil fuel is more economical than coke, the higher economy usually necessitates a higher pressure for the efficient atomising of the oil, and the noise caused thereby constitutes a grave objection to the process, while the need of extensive storage for the maintenance of a continuous supply presents serious difficulties.

"In the experiments with ordinary town gas, a variety of systems was tested, involving the use of gas at ordinary and high pressures, combined with variations in the pressure of air. The problem presenting itself for solution differed essentially from such a case as steam raising in that the combustion chamber must be reduced to the smallest practicable dimensions, so as to concentrate the heat on the crucible of metal, and this difficulty arises with both oil and gas, although it is perhaps greater in the former case, owing to the need to thoroughly atomise the oil."

The gas furnaces were designed in the Mint, and the burner ultimately adopted was made by Mr. S. N. Brayshaw, of Manchester. The gas is taken at the ordinary pressure in the main (about 3 inches of water) and mixed with air from a powerful blowing engine at about 2 pounds pressure. With care, the noise of these burners can be reduced sufficiently to be unobjectionable, the furnace linings compare very favorably with those hitherto used for coke in regard to endurance, and the crucibles used for gold are found to last longer (each crucible serving for an average of 18 heats, as against 12 when coke is used). The experiments clearly indicated that efficient combustion, combined with comparative silence, very largely depends, *inter alia*, on the correct formation of the burner nozzle and of the firebrick extension thereof.

During 1910, the Mint installed 16 gas heated furnaces, each capable of taking a 400-pound crucible, and fired with Brayshaw burners. These furnaces have a maximum capacity of 2¾ tons of sterling silver, or 2¼ tons of bronze per melt, and 4 melts of silver, or 3 of bronze can be made in an ordinary working day (8 A.M. to 6 P.M.). Five furnaces similarly gas heated, but of a smaller size, are in use for melting gold. Considering the large quantity of metal melted at the Mint, a very substantial saving in the cost of fuel alone has been effected by the use of gas. The incidental economies are, however, still greater. The cost of carting and handling both coke and clinker is saved, and the room formerly required for the storage of them is set free. The expenditure on crucibles, which is a large item, has been reduced by 33 per cent. The work of melting is less laborious, the loss of metal is much reduced, and the bars cast are better and more uniform.

# Items of Interest

## FROM VARIOUS LOCALITIES.

MR. ELI B. WHITNEY, for a long time in the service of the Brooklyn (N. Y.) Union Gas Company, died at his home in that city (No. 107 Sterling place) the morning of the 7th inst. He was in his 58th year, having been born in Phoenicia, N. Y., December 22, 1853. His wife survives him, likewise a daughter.

MR. W. A. CLABER has resigned the position of Auditor to the C. H. Geist Company, of Philadelphia, to organize The Audit Company, of Philadelphia, the purpose of which organization is to specialize in connection with the auditing, examining and investigating of public utility corporations. The officers of the Company are: President, C. H. Geist; Vice-President and General Counsel, Joseph A. Slattery; General Manager, W. A. Claber.

MR. J. K. RUSSELL, of Red Wing, Minn., took charge as Manager of the properties of the Linton (Ind.) Gas Company last Friday. The Linton plant is operated by a company in Chicago, of which concern Mr. Albert Sandt is Chief Engineer.

WE are advised that Mr. A. C. Einstein, who early this month accepted the position of General Manager of the Union Electric Light and Power Company, of St. Louis, Mo., will continue to act as President of the St. Louis County Gas Company. Mr. Einstein, who is in his 43d year, has been a resident of St. Louis since his early boyhood, and if one may judge as to the future through a review of the past, he is bound to figure prominently in the commerce of the State, the inhabitants of which are not noted in respect of taking things for granted.

THE Common Court of Pleas, No. 4, Pittsburgh, Pa., has decided that the Manufacturers' Heat and Light Company must live up to its franchise stipulation in respect of furnishing natural gas without charge to the borough buildings of Bellevue, Pa., and to 8 churches in Bellevue. The Company sought to evade the obligation on the ground that the diminished supplies under its control caused this feature of its franchise stipulation to become "unduly oppressive."

ADVICES from Antigo, Wis., dated the 9th inst., are to the effect that a meeting of the shareholders of the Antigo Gas Company was held the week previous, and important changes were made in the management. It was decided to bond the Company in $25,000, the proceeds from such issue to be devoted to tiding the concern over the development period of its existence and to pay off the current existing indebtedness. The officers named were: Directors, J. C. Spencer, Wm. Wallen, R. H. Hackett, P. F. Kelly and T. J. Kavanagh; President, J. C. Spencer; Vice-President and Treasurer, R. H. Hackett (Oshkosh); Secretary, William Wallen (Oshkosh). Our authority said also that it is likely someone yet to be named will succeed E. S. Rayworth as Manager.

THE Spring Valley (Ills.) Gas and Electric Company (capitalized in $300,000) has been incorporated by Messrs. C. H. Constant, H. E. and R. W. Brown.

MR. E. C. BUTLER has relieved Mr. F. P. Woy as Manager of the Albuquerque (N. M.) Gas, Electric Light and Power Company. Mr. Woy goes to Trinidad, Col., there to assume charge of the Trinidad Railway, Gas and Electric Company. Virtually this means an exchange of positions between the parties named.

THE McClellan alley substation of the Baltimore (Md.) Consolidated Gas, Electric Light and Power Company now contains one of the largest storage batteries in the world. In its composition and construction 630½ tons of copper were employed, and the cost of the apparatus was not far from $400,000.

THE City Council, of Lewes, Del., has granted a franchise to certain residents under which they will supply gas (for fuel use only) in "the near future." The "fuel condition only" exists because the authorities have for some time been operating an electric lighting plant on municipal account, from whence all the street lighting is being done. The incorporators are: Dr. William P. Orr and Messrs. W. C. Lafland, T. R. Ingram and Jas. T. Lank. Our informant adds that these are all responsible men.

THE Board of Supervisors, San Francisco, Cal., have been officially informed that the name of the San Francisco Gas and Electric Company has been changed to that of the Pacific Gas and Electric Company.

"L. R. L.," writing from Green Bay, Wis., under date of the 9th inst., says: I thought you would be interested to know that, in the case of the State *ex rel.*, the Green Bay Gas and Electric Company against the Minahan Building Company, Judge Hastings took the case away from the jury on the ground that there was nothing in it for jury consideration. He will, later on (the first week in January) hear argument of counsel in the premises. These involve the warrant or authority upon or under which the Minahan Building Company is selling light to the residents of a select section of the city. The Company was granted a franchise by the Council of 1907, and secured an indeterminate permit from the State Railroad Commission, so it is claimed. Attorney Fairchild, for the plaintiff, endeavored to show by the testimony of Jno. R. Minahan that little or no work was done by the Company when the suit was instituted in 1908. Dr. Minahan said a tunnel had been dug to Foy river under Washington street from the basement of the Minahan building, where the street lighting machinery is located. Men started doing work in the alley in the rear of the building, he said, on the day papers were served in the action. R. E. Minahan and his son, Eben R. Minahan, swore on the stand that Eben R. Minahan was given $10,000 by his father when he attained the age of 21 years in 1903. One-half of that sum was cash and the balance consisted of a law library and furniture. The evidence was secured by Attorney V. I. Minahan to show that Eben R. Minahan had money to invest in the Minahan Building Company when it was organized, and that it was the young man's money, not that of his father that was put in the corporation. Robert E. Minahan was Mayor when the franchise was given the Company. The case is a queer one all round, and has attracted quite some attention from the lighting interests of the State.

THE proprietors of the Rochester (Minn.) Light, Heat and Power Company are quite well satisfied with the results which are accompanying their recent action (the 11th November, in Chicago) in putting the gross rate at $1.60 per 1,000 cubic feet, quantities used monthly, combined with prompt payments of accounts, bringing the net rates to levels varying between $1.60 (maximum) and $1.20 (minimum) per 1,000 cubic feet. Our informant in this instance bluntly declares: "The Company does not wish the public to understand that this reduction is a charitable one. On the contrary, the Directors and the local management believe it good business, since the rate is fixed for each consumer according to the quantity of gas he uses—the more of the product that he used, the lower the rate."

PLANS for the consolidation of the business of the Perry (N. Y.) Electric Light Company and of the Warsaw (N. Y.) Gas and Electric Company have been virtually completed. We understand that the moving spirit in the merger was Mr. E. D. Hamlin, Vice-President of the Perry Electric Light Company. We further understand that the Perry proprietors are also closely allied to the Long Island Lighting Company, which concern operates some 10 or 12 electric plants on Long Island. If any of our readers are conversant with the history of the Long Island Lighting Company we would be glad to have some or any particulars respecting it.

CURRENT gossip has it that the plans for the reorganization of the Toledo (O.) Railways and Light Company are approaching finality, and it is believed that the terms will include the segregation of the gas and electric properties, to be controlled in a new Company through stock ownership. About $8,000,000 indebtedness of these properties will be provided for by the sale of $5,000,000 first mortgage bonds and first preferred cumulative 6 per cent. shares. It is conceded that the $6,000,000 first mortgage bonds of the Toledo Railways and Light Company will be retired at par during the year; that the 4 per cent. consolidated mortgage bonds, represented by the Protective Committee, will be exchanged for 4 per cent. cumulative preferred stock at par, and that common shareholders would be assessed $7 per share in return for full participation in the new common. And thus ends another scheme of a brilliant financier, who, however, received all his commissions on the "turnover" of some years ago.

THE new gas plant, recently completed to the order of the Trustees of Middleboro, Mass, which was put in actual commission some days ago, is working so satisfactorily that a cut in the gas rates, equalling 50 per cent. over the prior ones (or when the old plant was relied upon) has been determined upon.

THE Consolidated Gas, Electric Light and Power Company, Baltimore, Md., has sold the plot heretofore owned by it, on Clinton street near Boston street, to the Independent Ice Company, which concern will immediately enlarge its plant. The latter's present plant adjoins the site just purchased.

THE Valley City (N. D.) Gas Company (Frank Ploy har being the moving spirit) has been granted a gas franchise, the main provisions of which are: The plant to be commenced next spring (on or before May 1st), and to be in operation by May 1st, 1914. In the first year 4 miles of mains are to be laid; 2 miles additional the second year; 2 miles over all the third year; a bond of $2,000 was to be given; and the maximum rate for selling was put at $1.75 per 1,000 cubic feet, running thus to a minimum: When consumption output reached 15 million cubic feet per annum, $1.65; to 20 million, $1.55; to 25 million, $1.45; to exceed 25 million, $1.35—during all the sealing periods prompt payment (within 10 days) entitles the consumer to a further cash rebate of 10 per cent. on face of bill.

MR. JOHN M. STRASSER, formerly General Superintendent of the Illinois Gas and Electric Company, with headquarters in Streator, Ills., has been transferred to Joliet, to assume the duties of Division Superintendent of the Public Service Company, of Northern Illinois.

WRITE to the C. W. Hunt Company, 45 Broadway, N. Y., for a copy of its pamphlet No. 11-6, which has for its subject a description of its new, plumbago-laid, manila rope for transmission of power and hoisting purpases. It is known to the market as "Stevedore Rope;" and the Company makes this unconditional statement respecting it: "We manufacture only one quality of rope; we do not make common rope; nor do we ask customers to take our word for the quality of our 'Stevedore' rope; but insure them against loss if it is not all we claim for it."

AT a meeting of the St. Boniface (Manitoba) Board of Trade a matter which was discussed at length was the proposition to build a gas plant to be operated on municipal account. Testimony showing that such plan of furnishing gas had been successfully tried out in other Canadian settlements (notably in St. Thomas and Kingston) having been given, the Board of Trade decided to work for the passage of a by-law to that effect to be voted on at the next civic election.

THE Newark (N. J.) *News*, for the 9th inst., says that W. L. Keplinger, Manager and Receiver for the Newton (N. J.) Gas and Electric Company, would not acknowledge that a party of Wilkes-Barre (Pa.) capitalists were negotiating for the purchase of the plant. Neither would he deny the report. "Nothing to say," was his answer to all questions. The Company is capitalized in $146,600, and the shareholders are mainly Newton and Passaic county residents. The President is ex-Assemblyman L. S. Iliff.

THE appraisement of the holdings of the Hamilton (O.) Gas and Electric Company, have been handed in by Trustee Goodman, who it is thought would be the purchaser of the plant, which was to have been sold at auction last Thursday. He had been offered the position of Manager of the Hamilton Iron and Steel Company.

MR. FRANK L. KING has been appointed Manager of the electrical division of the business of the Citizens Gas, Electric and Heating Company, of Mt. Vernon, Ills.

THE American Gas Construction Company, of Newton, Ia., will construct a gas plant at Paxton, Ills., under a franchise granted some evenings ago. The life of the franchise is 25 years; the maximum selling rate shall never exceed $1.50 per 1,000 cubic feet; the plant shall be completed and ready to supply consumers within 12 months from the passage of the ordinance, and the city is to be given 36,000 cubic feet of gas per annum for the lighting of the city building and the pumping station as well.

THE Cities Service Company, of New York, which is the controlling factor in the business of the Denver (Col.) Gas and Electric Company, Mr. H. L. Doherty, President, has succeeded through purchase to the ownership of the Brush Electric Light and Power Company, of Galveston, Tex. The Company within the year has been granted a franchise extension to run for 50 years, and the physical condition of its properties is excellent.

## The Market for Gas Securities.

The market for city shares showed a bit of activity in the week, although the volume of trading therein remained on the small side. However, quite the reverse of the conditions which prevailed since the first of the month, business was done in the main at figures rather in excess of those quoted for a fortnight. Consolidated opened this morning (Friday) at 138½ to 139, and buyers rather than sellers were in evidence. The disquieting factor is the attitude of the labor agitators, although it does not seem even probable that the men will go out. They certainly will not, if their future standing is to be a determining factor.

Brooklyn Union is dull and strong. The sensible work done on main extensions the past 3 years is beginning now to show its extreme value. Fewer complaints have been received at the various branches (especially those supplying the needs of consumers along the southern territory of the Company) than those recorded on like account in that section for 10 years or more. The U. G. I. Company's regular quarterly dividend of 2 per cent. is payable the 15th prox. Some of the wise ones declare that another readjustment in respect of its capitalization, may be looked for next spring. Lacledes are stiffening up a bit, and those conversant with its affairs assert that Mr. Holman is to succeed Mr. Bixby in the Presidency of that corporation.

Special shareholders' meetings of the Troy and Albany (N. Y.) Companies are called for on these dates: Troy, 28th inst., to consider an increase of capital stock of 200 per cent., from $1,000,000 to $3,000,000; Albany, the 29th inst., to consider a 225 per cent. increase, from $2,000,000 to $6,500,000.

## Gas Stocks.

**Quotations by George W. Close, Broker and Dealer in Gas Stocks.**

115 BROADWAY, NEW YORK CITY.

DECEMBER 18.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

| *N. Y. City Companies.* | *Capital.* | *Par.* | *Bid.* | *Asked* |
|---|---|---|---|---|
| Consolidated Gas Co. | $78,177,000 | 100 | 138½ | 139 |
| Central Union Gas Co. — 1st 5's, due 1972, J. & J. | 3,000,000 | 1,000 | 103 | 105 |
| Equitable Gas Light Co.— Con. 5's, due 1932, M. & S. | 1,000,000 | 1,000 | 105 | 106 |
| Mutual Gas Co. | 3,600,000 | 100 | 155 | 165 |
| New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J. | 11,000,000 | 1,000 | 100 | 101½ |
| New York & Richmond Gas Co. (Staten Island) | 1,500,000 | 100 | 35 | 50 |
| 1st Mtg. Gold Bds. 5 p. ct. | 1,000,000 | — | 98½ | 100½ |
| New York and East River— 1st 5's, due 1944, J. & J. | 3,500,000 | 1,000 | 103 | 105 |
| Con. 5's, due 1945, J. & J. | 1,500,000 | — | 95 | 100 |
| Northern Union— 1st 5's, due 1927, J. & J. | 1,250,000 | 1,000 | 94 | 100 |
| Standard | 5,000,000 | 100 | 60 | 70 |
| Preferred | 5,000,000 | 100 | 90 | 100 |
| 1st Mtg. 5's, due 1930, M. & N. | 1,500,000 | 1,000 | 103 | 105 |
| The Brooklyn Union | 15,000,000 | 1,000 | 141 | 145 |
| 1st Con. 5's, due 1948, M. & N. | 15,000,000 | — | 106½ | 107 |
| Yonkers | 299,650 | 500 | 130 | — |
| *Out-of-Town Companies.* | | | | |
| Bay State | 50,000,000 | 50 | ½ | ¾ |
| " Income Bonds | 2,000,000 | 1,000 | — | 75 |
| Binghampton Gas Works | 450,000 | 100 | — | — |
| " 1st Mtg. 5's | 509,000 | 1,000 | 97 | 100 |
| Boston United Gas Co.— 1st Series S. F. Trust | 7,000,000 | 1,000 | 82 | 85 |
| 2d " " " | 3,000,000 | 1,000 | 47½ | 50 |
| Buffalo City Gas Co. | 5,500,000 | 100 | 5 | 8 |
| Bonds, 5's | 5,250,000 | 1,000 | 59 | 60 |
| Capital, Sacramento | 500,000 | 50 | — | 35 |
| Bonds (6's) | 150,000 | 1,000 | — | — |
| Chicago Gas Co. Guaranteed Gold Bonds | 7,560,000 | 1,000 | 104 | 105¼ |
| Cincinnati Gas and Electric Co. | 29,500,000 | 100 | 87 | 90 |
| Columbus (O.) Gas Co., 1st Mortgage Bonds | 1,500,000 | 1,000 | 96 | 98 |
| Columbus (O.) Gas Lt. & Heating Co. | 1,682,750 | 100 | 90½ | 91 |
| Preferred | 3,026,500 | 100 | 75½ | 80 |
| Consumers, Toronto | 2,000,000 | 50 | 200 | 204 |
| Consolidated, Baltimore | 13,460,084 | — | — | — |
| Mortgages, 5's | 3,400,000 | — | — | — |
| General Mortgage 4½ | 10,661,000 | — | — | — |
| Con. Gas Co., Baltimore City, 4½ | 2,751,000 | — | — | — |
| Equitable Gas & Fuel Co., Chicago, Bonds | 2,000,000 | 1,000 | — | 101 |
| Essex and Hudson Gas Co. | 6,500,000 | — | 135 | 138 |
| Fort Wayne | 2,000,000 | — | — | — |
| " Bonds | 2,000,000 | — | 55 | — |
| Grand Rapids Gas Light Co., 1st Mtg. 5's | 1,350,000 | 1,000 | 100 | 101 |
| Hartford | 750,000 | 25 | 190 | 200 |
| Hudson County Gas Co., of New Jersey | 10,500,000 | — | 130 | 138 |
| " Bonds, 5's | 10,500,000 | — | 104 | 106 |
| Indianapolis | 2,000,000 | — | — | 38 |
| " Bonds, 5's | 2,650,000 | — | 104½ | 105 |
| Jackson Gas Co. | 250,000 | 50 | 88 | — |
| " 1st Mtg. 5's | 290,000 | 1,000 | 97 | 100 |
| Kansas City Gas Light Co., of Missouri | 5,000,000 | 100 | — | 86 |
| Bonds, 1st 5's | 3,822,000 | 1,000 | 102 | 104 |
| Laclede Gas Co., St. Louis. | 10,000,000 | 100 | 104½ | 105 |
| Preferred | 2,500,000 | 100 | 114 | 120 |
| Bonds | 10,000,000 | 1,000 | 103½ | 103 |
| Lafayette Gas Co., Ind. | 1,000,000 | 100 | — | 60 |
| Bonds | 1,000,000 | 1,000 | 60 | 65 |
| Louisville | 2,570,000 | 50 | 143 | 145 |
| Madison Gas and Electric Co. " 1st Mtg. 6's | 400,000 | 1,000 | 106 | 108½ |
| Massachusetts Gas Companies, of Boston | 25,000,000 | 100 | 90¼ | 90¾ |
| Preferred | 25,000,000 | 100 | 95 | 95¼ |
| Montreal Gas Co., Canada | 2,000,000 | 100 | 218 | 218½ |
| Nashville Gas Light Co. | 1,000,000 | 100 | 110 | — |
| Newark, N. J., Con. Gas Co. | 6,000,000 | — | 97 | 98 |
| Bonds, 6's | 6,000,000 | — | 127 | 128 |
| New Haven Gas Co. | 2,000,000 | 25 | 200 | — |
| Peoples Gas Lt. & Coke Co., Chicago | 25,000,000 | 100 | 103 | 104 |
| 1st Mortgage | 20,100,000 | 1,000 | — | — |
| 2d " | 2,500,000 | 1,000 | 104 | — |
| Rochester Gas & Electric Co. | 2,150,000 | 50 | 88 | — |
| Preferred | 2,150,000 | 50 | 118 | — |
| Consolidated 5's | 2,000,000 | — | 104¾ | 105¼ |
| Pacific Gas and Electric Co. | 15,500,000 | — | — | — |
| St. Joseph Gas Co.— 1st Mtg. 5's | 1,000,000 | 1,000 | 94 | 98 |

### DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, Dec. 13, 1911.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Jan. 15, 1911, to stockholders of record at the close of business, Dec. 30, 1911. Checks will be mailed.

1893-4 LEWIS LILLIE, Treasurer.

# MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

*American Gas Institute.*—Annual meeting, October 16 to 18, 1912. Atlantic City, N. J. Officers: President, Ira C. Copley, Aurora, Ills. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

*Canadian Gas Association.*—Annual meeting, ———— Officers: President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keilior, Hamilton, Ont.

*Empire State Gas and Electric Association.*—Annual meeting, New York City, Oct. 1912. Officers: President, R. M. Searle, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street. New York City.

*Guild of Gas Managers of New England.*—Annual meeting, March, 1912. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

*Illinois Gas Association.*—Annual meeting, time, March, 1912, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, F. E. Newberry, Dixon, Ills.

*Illuminating Engineering Society.*—Annual meeting, Sept. ————1912, ———— Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York, Secretary, Albert J. Marshall, 16 East 40th street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, A. L. Eustice, 105 North Wabash avenue.

*Indiana Gas Association.*—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

*Iowa District Gas Association.*—Annual meeting, time, May, ——, 1912; Lincoln, Neb. Officers: President, G. W. Clabaugh, Omaha, Neb.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

*Kansas Gas, Water and Electric Light Association.*—Annual meeting, time, Sept. 1912. Manhattan, Kas. Officers: President, B. F. Eyer, Manhattan, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

*Michigan Gas Association*—Annual meeting, time, Sept. ————1912;———— Officers: President, F. W. Blowers, Kalamazoo, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

*Missouri Electric Light, Gas, Water Works and Street Railway Association.*—Annual meeting, April, 1912; St. Louis, Mo. Officers: President, F. E. Murray, Louisiana, Mo.; Secretary and Treasurer, N. J. Cunningham, Springfield, Mo.

*National Commercial Gas Association.*—Annual meeting, December, 1912. Atlanta, Ga. Officers: President, C. L. Holman, St. Louis, Mo.; Secretary, Louis Stotz, 29 West 39th street, New York City.

*Natural Gas Association.*—Annual meeting, May, 1912, Kansas City, Mo.; Officers: President, A. B. Macbeth, Independence, Kas. Secretary, T. C. Jones, Delaware, O.

*New England Gas Association.*—Annual meeting, third Wednesday in February, 1912 Boston. Officers: President, J. A. Coffin, Gloucester, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

*New Jersey State Gas Association.*—President, William H. Pettes, Newark, N. J.; Secretary-Treasurer, Arthur H. Osborn, Belmar, N. J.

*Ohio Gas Association.*—Annual meeting, February 6 and 7, 1912, Columbus, O.; President, John M. Garard, Columbus, O.; Secretary-Treasurer, T. C. Jones, Delaware, O.

*Oklahoma Gas, Electric and Railway Association.*—President, Noel R. Gascho, Alva Okla.; Secretary, H. V. Bozell, Norman, Okla.

*Pacific Coast Gas Association.*—Annual meeting, Sept. ————1912, ———— ——Officers: President, W. Baurhyte, Los Angeles, Cal.; Vice-President, Henry E. Adams, Stockton, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

*Pennsylvania Gas Association.*—Annual meeting, York, Pa., April 8-10, 1912, Officers, President, C. W. Butterworth, Milton, Pa.; Secretary-Treasurer, William H. Merritt, Lebanon, Pa.

*Society of Gas Lighting.*—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 254 West 39th street, New York city.

*Southern Gas Association.*—Annual meeting, April, 1912, Jacksonville, Fla. Officers, President, H. B. Hoyt, Jacksonville, Fla.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

*Southwestern Electrical and Gas Association.*—Annual meeting. April 27, 28, 29, 1912; Houston, Tex. Officers: President, J. E. Carroll, Beaumont, Tex.; Secretary, D. G. Fisher, Dallas, Tex.

*Wisconsin Gas Association.*—Annual meeting, May 15 and 16, 1912, Milwaukee, Wis. Officers: President, H. M. Buck, Waukesha, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.